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OCTOBER, 1908.

$2.00 per year.
$3.00 with Directory.

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TEXTILE WORLD RECORD

1908

Special Features

The Saratoga Convention of the National Association of Cotton Manufacturers

Will Foreign Manufacturers Help Us Revise the Dingley Tariff.

Modern European Methods of Wool Manufacture.

Estimating the Manufacturing Cost of Knit Goods.

Dyeing Khaki.

The Classification of Cotton.

LORD & NAGLE COMPANY · BOSTON, MASS.

JOHN JEPSON, BOSTON.

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T 5 1300
T36

The Textile-Finishing Machinery Co.

HOWARD BUILDING

STAIRWAYS, 83 EXCHANGE PLACE [ENTRANCES] ELEVATOR, 171 WESTMINSTER ST.

PROVIDENCE, R. I.

BUILDERS OF
ALL KINDS OF

MACHINERY

FOR

BLEACHING
DYEING
DRYING

AND

FINISHING

Singeing Machines,

Boiling Kiers,

Washers, Squeezers,

Chemic and Sour

Rusden Patent

Continuous Chainless

Steamer,

Aniline Agers,

Dyeing Machines,

Open Soapers,

Blanket Washers,

Color Kettles,

Horizontal or Vertical Drying Machines, with Copper or Tinned Iron Cylinders,

Automatic Tentering Machines,

Water and Starch Mangles,

Dampening Machines,

Dyeing Machines for Chain Warps.

Calenders for Rolling, Glazing, Chasing and Embossing, also Calenders for Moire Finish.

Sole Manufacturers of Patented Flexible Cloth Expander for Cylinder Drying Machines, Calenders, Mangles, &c.

Patent Combination Rolls Made of Cotton and Husk, especially adapted for Soft Finish, Unequalled for Elasticity and Durability.

Cotton, Paper, Husk Chilled Iron, Brass and Rubber Rolls, Electro-deposited Copper Rolls for all Purposes.

Padding and Drying Machines for Shade Cloths.

Single and Double Cylinder Engines.

Hydraulic Presses and Pumps.

Mercerizing Machinery for Piece Goods and Yarn in the Warp or Chain

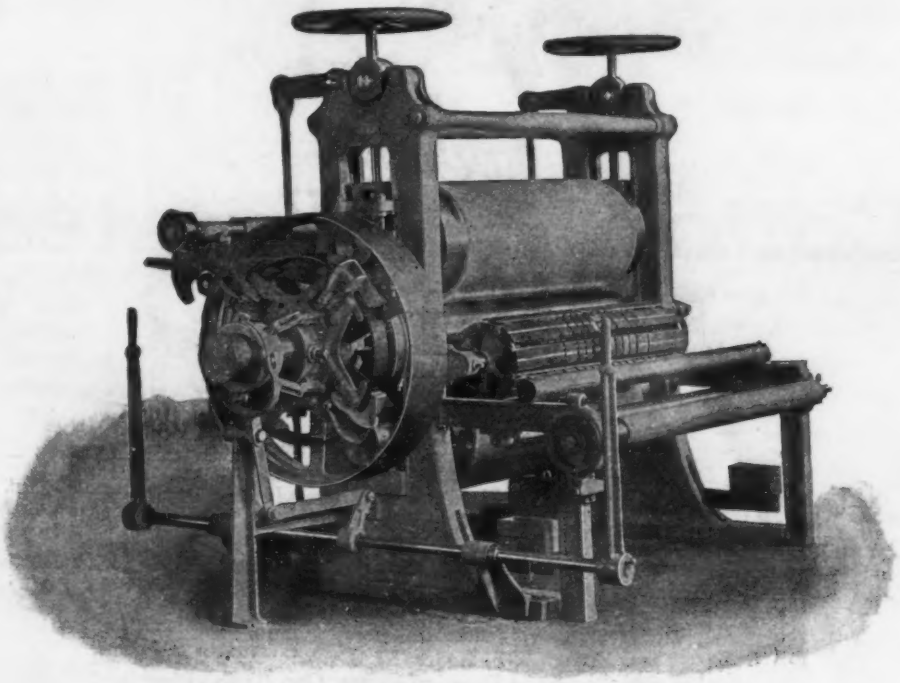
ALL KINDS OF OUTFITS FOR BLEACHING THREAD AND SOFT TWISTED YARN.
BLEACHING MACHINERY FOR YARNS IN THE WARP OR CHAIN.

Estimates, Drawings and full particulars of complete plants furnished on application

Southern Agent, STUART W. CRAMER, Charlotte, N. C., Equitable Building, Atlanta, Ga.

Bleaching,
Dyeing, Drying,
Finishing Machinery

for all textile fabrics.

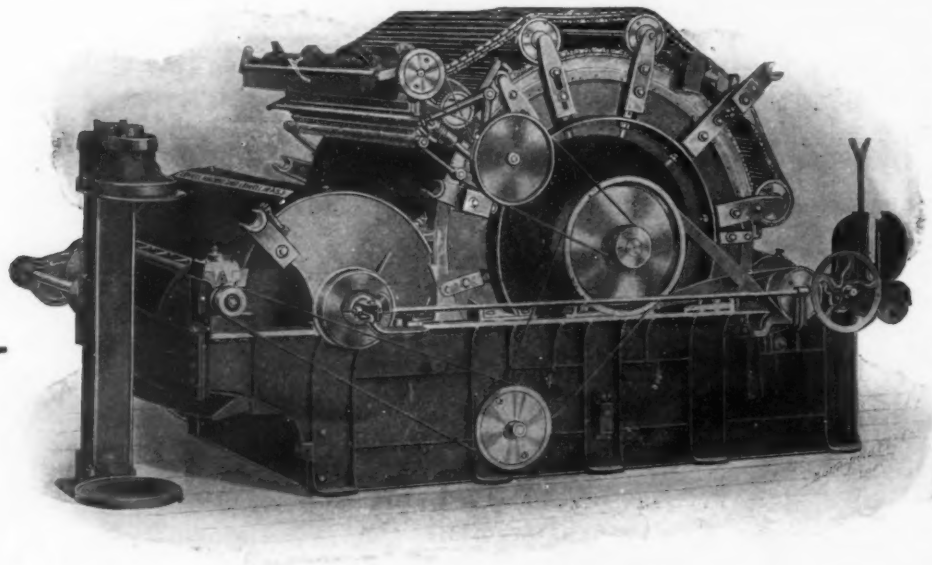


THREE-ROLL CALENDER.

H. W. BUTTERWORTH & SONS CO.

PHILADELPHIA, PA.

Providence Office, Room 417, Industrial Trust Bldg.



Cotton and Worsted Machinery

With Modifications to Suit Any Class of Work.

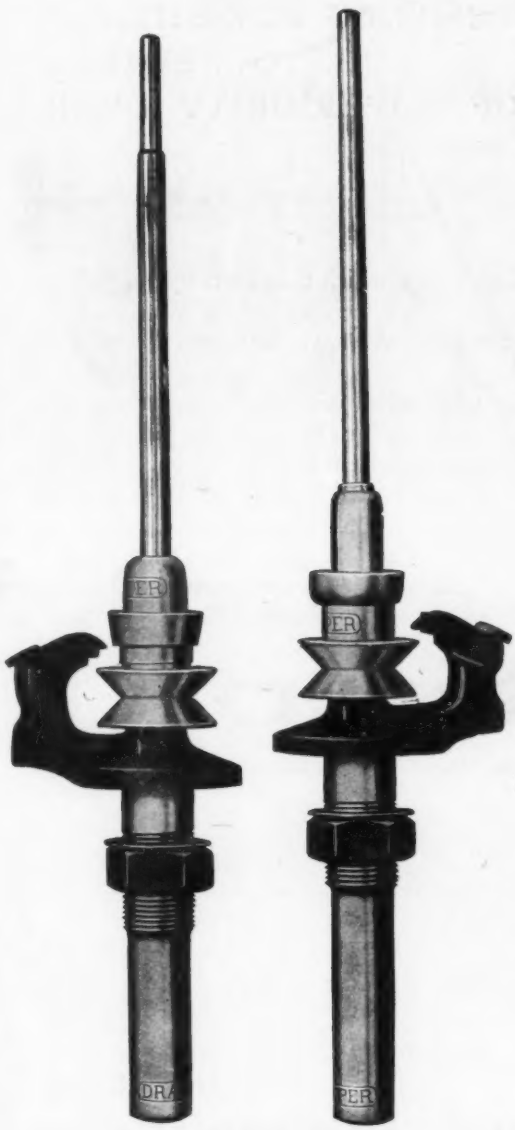
Cotton Machinery: Cards, Railway Heads, Drawing Frames, Fly Frames, Speeders, Ring Spinning Frames, Twisters, Spoolers, Reels, Warpers, Slashers, Winders, Looms, Shearing Machines, Balling Machines, Folders, Stamping Machines, Sewing Machines, Size Pumps, Size Kettles, Drawing-in Frames, Baling Presses, Indigo Grinders.

Worsted Machinery: Spinning Frames with caps, rings or flyers, Dandy Rovers and Reducers, Cone Second Finishers, Reducers and Rovers, Gill Boxes for Drawing, Preparing and Finishing, Weigh Boxes and Drawing Boxes, Cap Trap, Flyer and Ring Twisters.

Plans, Specifications and Estimates furnished upon application.

Lowell Machine Shop

LOWELL, MASS.



Two New
Large Size
Spinning Spindles.

We make

Draper,
Whitin,
McMullan

and other
types of

Spindles;

also

Northrop Looms,

Twisters,
Warpers,
Spoolers,
Reels,

Banding Machines,

etc., etc.

Draper Company,
HOPEDALE,
MASS.

THE EMPHATIC SUCCESS OF OUR "IDEAL" AUTOMATIC LOOM IS DUE TO SEVERAL SALIENT POINTS OF SUPERIORITY OVER ALL COMPETITORS:

1st. The ease and smoothness with which they start up.

2d. The acknowledged superiority of the cloth woven.

3d. Simple and thoroughly mechanical construction, assuring freedom from the constant breakage and expensive repairs attending other automatic looms.

4th. No special bobbins, shuttles or other expensive parts.

5th. Ability to use cop or bobbin filling interchangeably.

6th. Superiority of warp stop motion which does not break or fray the softest yarn.

7th. Of the thousands in operation not a single bobbin or crank shaft broken.

IN PROOF OF CLAIMS WE POINT TO THOSE MILLS FORMERLY USING OUR COMPETITORS' LOOMS THAT ARE NOW USING OURS.

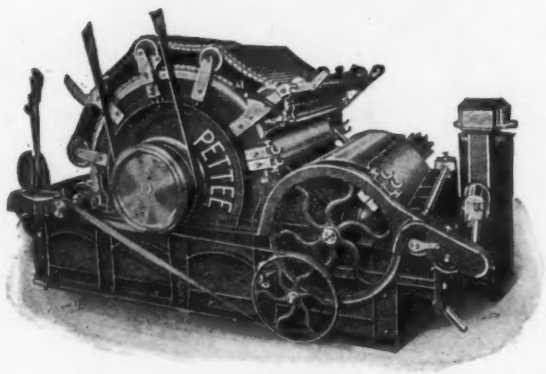
The Stafford Company

Readville, Mass.

Saco and Pettee Machine Shops

NEWTON UPPER FALLS, MASS., U. S. A.

COTTON MACHINERY



Revolving
Flat Cards,
Drawing
Frames,
Railway Heads,
Slubbing,
Intermediate
and
Roving
Frames,
Spinning Frames,
Spoolers
and
Reels.

Shops—

Biddeford, Me.

Newton Upper Falls, Mass.

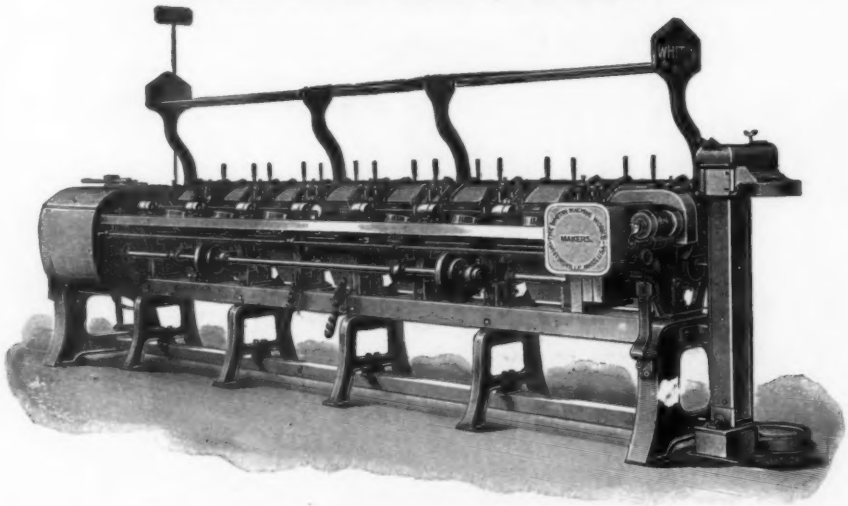
Southern Agent, A. H. WASHBURN, Charlotte, N. C.

THE

WHITIN MACHINE WORKS,

Cotton Machinery

WHITINSVILLE, MASS.



HIGH SPEED COMBER 1906 MODEL.

Revolving Flat Carding Engines,
Sliver Lap Machines,
Ribbon Lap Machines, Combers,
Railway Heads, Drawing Frames,
Spinning Frames, Spoolers, Twisters,
Long Chain Quilling Machines, Reels, Looms.

Southern Agent,
S. W. CRAMER

Trust Building, CHARLOTTE, N. C.
Equitable Building, ATLANTA, GA.

"Kitson Products"

Blowing Systems

For Conveying Bale Cotton
from Storehouse to Picker-room

Self-Feeding Openers
Lappers and
Cleaning Trunks

Waste-Working Machinery

Raw Stock Cotton Dryers

We own the Patterns and can furnish REPAIR PARTS for PICKERS
formerly built by

WHITEHEAD & ATHERTON, . Lowell, Mass.
ATHERTON MACHINE CO., - - Lowell, Mass.
A. T. ATHERTON MACHINE CO., Pawtucket, R. I.

Kitson Machine Shop

Lowell, Mass.

SCOTT & WILLIAMS

2079 E. Cumberland Street, Philadelphia, Pa., U. S. A.

BUILDERS OF

Full Particulars, Samples nnd Special Catalogues on Application.

Rib Knitting Machinery for Underwear and Hosiery

Plain, Single Lever or with Welt, Slack Course and Automatic Slackening Device for Welt.

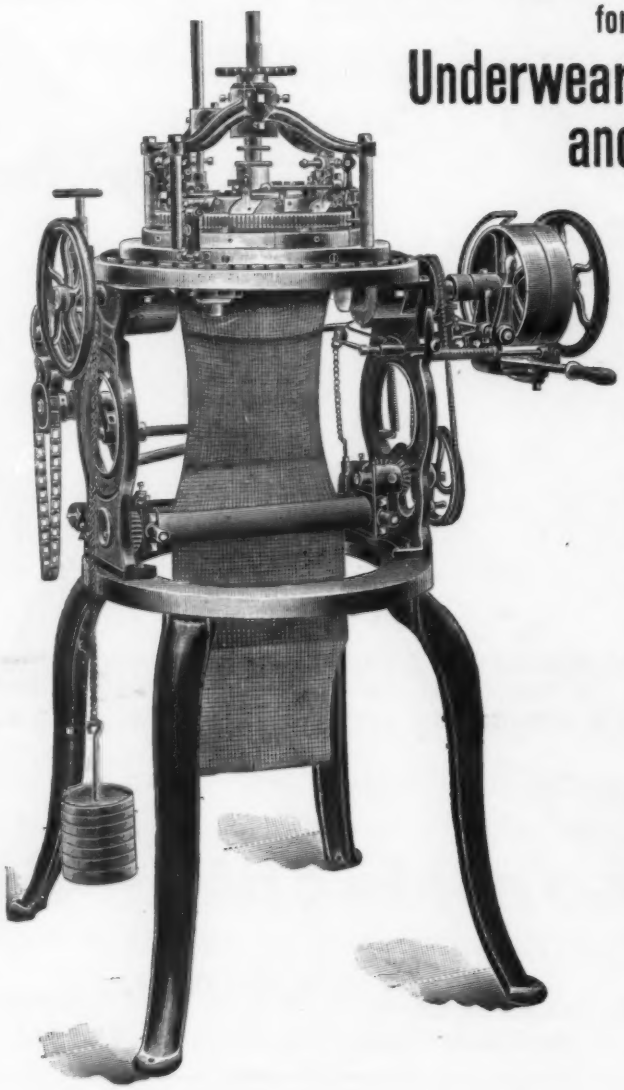
Improved Measuring Device, by actual length knit.

Sizes 8 to 24 inches, inclusive, varying by one inch.

Number of Feeds, 4 to 12, according to style and diameter of machine.

Solid Forged Steel Cylinders, specially hardened or with patent inserted walls for fine fabric.

Special Machinery for Sweaters, etc.



The illustration shows our

Improved High Speed Single Lever Automatic Ribbed Underwear Machine

for making ladies' and gents' ribbed underwear, union suits, etc., plain and shaped.

We build Loopers, Ribbers and other Machinery for Knitting Mills

As well as

A Complete Line of Full Automatic and 7-8 Automatic Seamless Hosiery Machinery.

"Universal" Winding Machines

GIVE THE LARGEST PRODUCTION BOTH PER SPINDLE AND PER OPERATIVE. THE SELF-OILING FEATURE REDUCES THE UPKEEP COST TO A MINIMUM

Universal Winding Co.

95 South Street, Boston, Mass., U. S. A.

International Winding Company

Saville Street, Oxford Road, Manchester, England

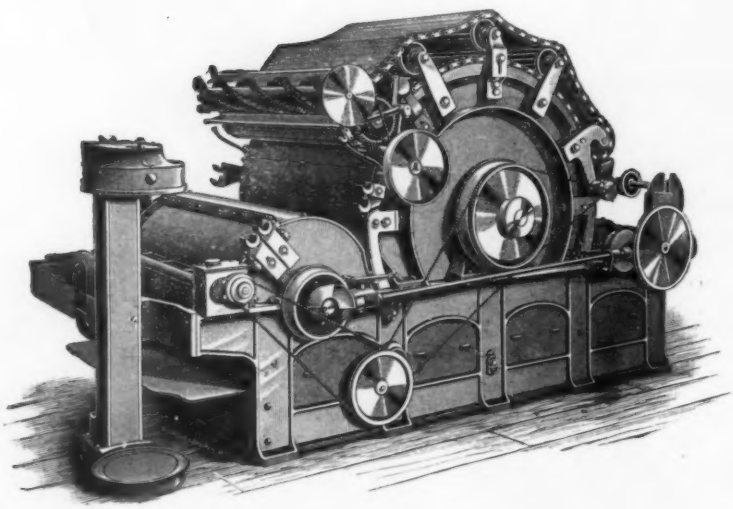
16 St. Johannvorstadt, Basel, Switzerland

Cotton Machinery

MASON MACHINE WORKS,

TAUNTON, MASS.

Southern Office,
Charlotte,
N. C.



Cards,
Combers, Railway
Heads, Drawing Frames
Spinning Frames, Mules and Looms

INCLUDING

Plain and Fancy Silk Looms

EVAN ARTHUR LEIGH

232 Summer Street (opposite the South Station), Boston, Mass.

SOLE AGENT

IN THE UNITED STATES AND CANADA FOR

Platt Bros. & Co., Ltd.

BY FAR THE LARGEST MAKERS IN THE WORLD OF

Cotton, Woolen and Worsted Machinery

Platt's Patent Opening and Picking Machinery.
Platt's Cotton Comber will comb from 7-8" stock to Sea Islands.
Platt's Special Machinery for Making Cotton Waste into Yarns.
Platt's Special Machinery for Making French Worsted Yarns.
Platt's Woolen and Worsted Carding Engines, Special Designs.
Platt's Cotton, Cotton Waste, Woolen and Worsted Mules.

MATHER & PLATT, LTD.

Dyeing and Finishing Machinery.
Archbutt-Deeley System for purifying and softening water.

TEXTILE MACHINERY ASSOCIATION, LTD.

Flax, Hemp and Jute Machinery.

GEORGE HODGSON, LTD.

Looms for Worsteds, etc.

THE PATENT AUTOMATIC FEEDING MACH. CO., LTD.

Patent Feeding Machines for wool, cotton, flax, fur and fibrous material.

JOSEPH SYKES BROS.,
Card Clothing for Cotton.

JAMES CRITCHLEY & SON'S.
Card Clothing for Woolen and Worsted.

DRONSFIELD BROS'.

Grinding Machinery and Emery Filleting. The Best French and English Combing and Rubbing Aprons. Harding's Pins and Circles. Varey's Fallers, etc.

25,000

CORK INSERTS

(Patented)

in one order recently placed by the

AMOSKEAG MFG. CO.

to be used for additional equipment of

PULLEYS AND CLUTCHES

is indicative of the saving effected by the use of

CORK INSERTS

They eliminate belt slip. Transmit 50 to 100% additional power. Permit slacker belts, preventing friction losses and belt wear. Are not affected by dust, water, oil or atmospheric conditions. Are practically indestructible and can be used in pulleys of all sizes.

Why don't you try them on some hard drive in your mill?

For prices and particulars apply to

National Brake & Clutch Co.

16 State Street, BOSTON, MASS.

Dynamo or High-Speed Fibre Faced Cork Insert Pulley.

The Automatic Regulation of Humidity and Temperature

is an essential feature of any system. The Cramer Automatic Regulator (the only one on the market) controls both Heating and Humidifying systems and each room separately. It is a wet and dry bulb instrument yet no rags and wickings to change and keep wet. Can be applied to old plants of any make of humidifier as well as to new equipments of our own make.

The Cramer System of Air Conditioning

(Fully covered by patents in the United States and Foreign Countries)

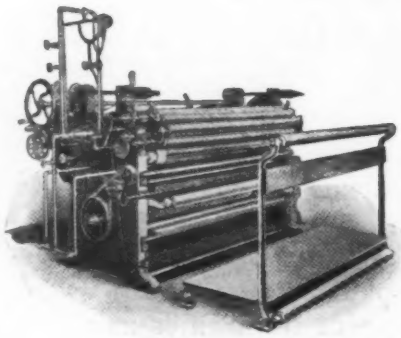
was designed with full knowledge of manufacfacturers requirements gained in the construction and complete equipment of many cotton mills and the reorganization of many plants. It employs both Fan and Spray types of Humidifiers. All parts of each type that come into contact with water are drawn from sheet copper, and our improved construction permits of instant access to the interior for cleaning purposes, without taking down, or breaking a pipe connection. Efficient, durable, air cleansing and sanitary. Reference made to large installations in Northern and Southern mills. New plants installed complete. Old plants overhauled and revamped.

Stuart W. Cramer,

Court House Square,
CHARLOTTE, N. C.

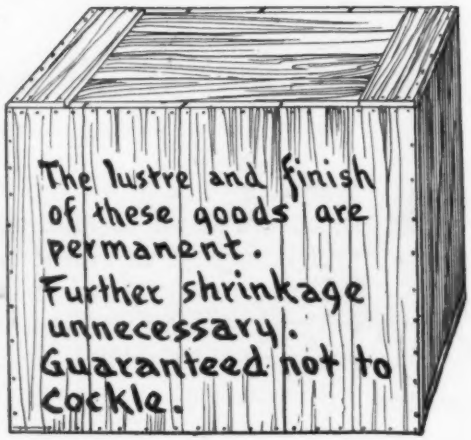
Candler Building
ATLANTA, GA.

Woolens and Worsteds



From Press to Case within an hour

and the guarantee on the case may be tagged on every piece when finished by our decating process.



No more London shrinking.

No more time wasted (with uneven results) **by the old style wet processes.**

No more cockling.

Let us explain the process to you.

L. H. A. Schwartz & Co. Sole American Agents, Exchange Bldg., Boston.

Importers of Textile Specialties.

JAMES HUNTER MACHINE CO.

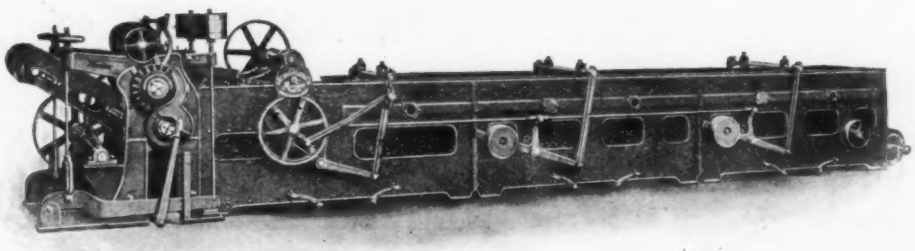
NORTH ADAMS, MASS., U. S. A.

Wool Washers. *Bulletin 54*

The Hunter

MODEL D

WOOL WASHER



"ASK ANY USER"

Bulletin 54 describes it

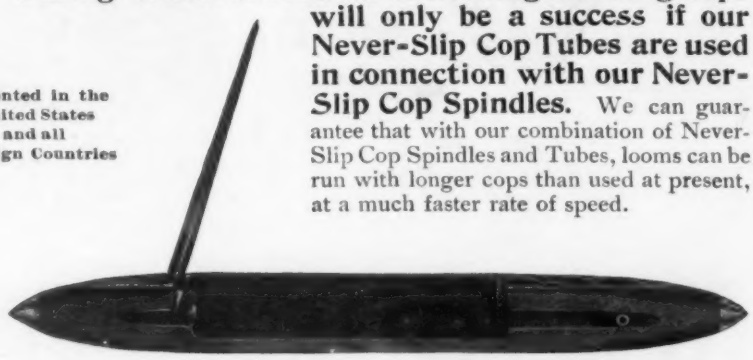
Never-Slip
Cop Spindles and Tubes

Never-Slip Cop Tube

Patent applied for.

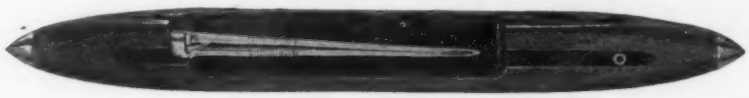
Patented in the United States and all Foreign Countries

Filling-Waste is reduced to nothing and long Cops will only be a success if our Never-Slip Cop Tubes are used in connection with our Never-Slip Cop Spindles. We can guarantee that with our combination of Never-Slip Cop Spindles and Tubes, looms can be run with longer cops than used at present, at a much faster rate of speed.



Shuttle with Spindle Raised

U. S. Patents: 778851, Jan 3, 1905; 790611, May 23, 1905; other patents pending



Shuttle with Spindle Lowered

U. S. Patents: 778851, Jan. 3, 1905; 790611, May 23, 1905; other patents pending

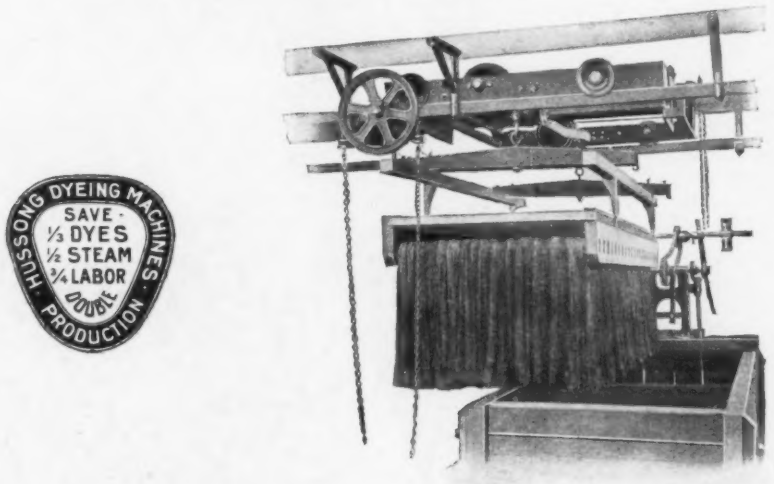
American Textile Specialty Machinery Co.

MANUFACTURERS OF

Shuttles and Shuttle Irons for all Textile Purposes.

New York Office, 363-373 Rider Ave. **670 Eddy St., Providence, R. I.**

All infringements will be prosecuted



What would happen

If you knew our Dyeing Machines and the results they will give you, as we know them?—*We could not supply the demand.*

If it were only possible for us to take each one of you who want a new Dyeing Machine, or should have one, to some one of our many customers, and let them tell you as they have told us repeatedly, how infinitely better and more economical their results, with a far larger production, you would be convinced in a few minutes that the *Hussong* was the machine for your money.

These machines dye Cotton and Woolen Yarns, Worsted and Woolen Slubbing, Hosiery, saving many operations, Raw Stock and Bleaching.

We want to emphasize very strongly that they not only dye these goods enumerated above, *but dye them better and at less cost than any other machine manufactured.* We can prove it to you,—give us the opportunity.

The American Woolen Co.'s Order

We installed about six weeks ago two machines in the Wood Worsted Mills, Lawrence, Mass., two in the Washington Mills, Lawrence, *and a repeat order* of four machines for the Riverside Mills, Providence, R. I.

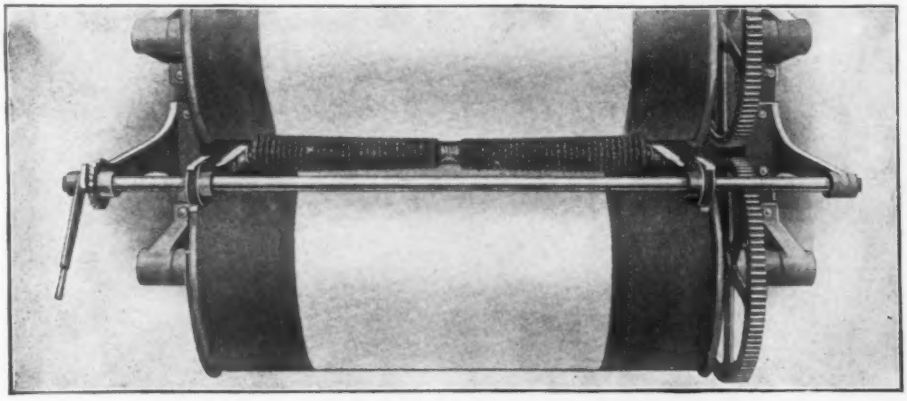
These mills are after results and generally get what they go after.

Hussong Dyeing Machine Co., Groveville, N. J.

New Bristle Cloth Stretcher

(Patented)

For Cotton Cloths, Printed Goods, Pure and Soft Finish Goods, Lace Curtains, Surgical Gauze, Cheese Cloths, Canton Flannels, Napped Goods, Drills, Shirtings, Sheetings, Woolens, Silks, Shoe Duck, Burlaps, Carpets, Etc., Etc.



SINGLE BRUSH MACHINE.

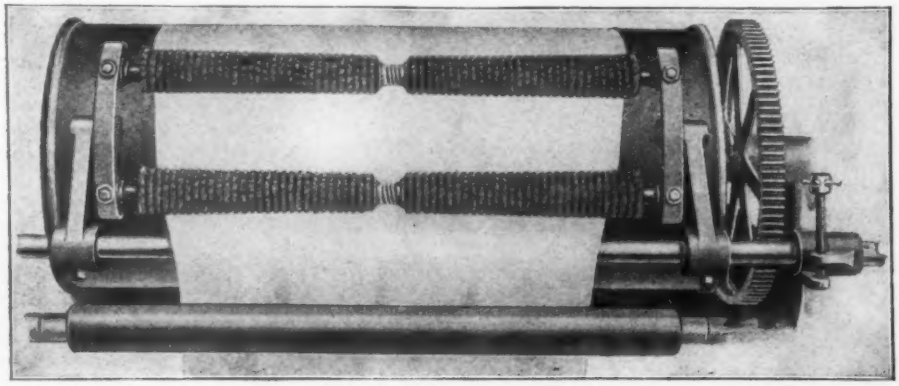
Features Will stretch any and all classes of fabrics in the easiest, simplest and most satisfactory manner without disturbing the finish, damaging the warp, bending the weft or distressing the fabrics in any way. Can be applied to machines in a variety of ways to suit requirements.

No dirt, grease or oil; no complications in adjusting; no threading up: in fact every objectionable feature is eliminated in this new idea for stretching fabrics.

With this machine we defy even comparison with anything yet created for a similar purpose.

The truth of these claims has been demonstrated by two years regular work on all classes of goods in leading mills and finishing establishments in this country and abroad.

Costs nothing to try it. Sold on approval.



DOUBLE BRUSH MACHINE.

American Finishing Machinery Company

45 Milk Street, Boston, Mass.

4 Cannon, St., Manchester, England.

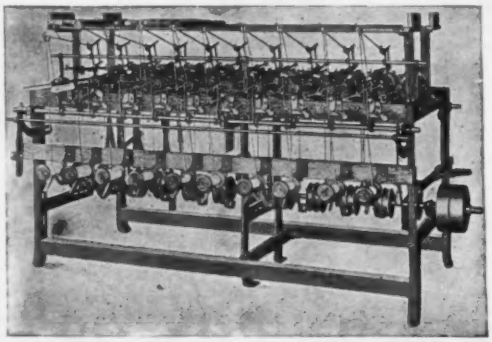
OSWALD LEVER CO.

(Formerly LEVER & GRUNDY.)

Lehigh Ave. and Mascher Sts., PHILADELPHIA, PA.

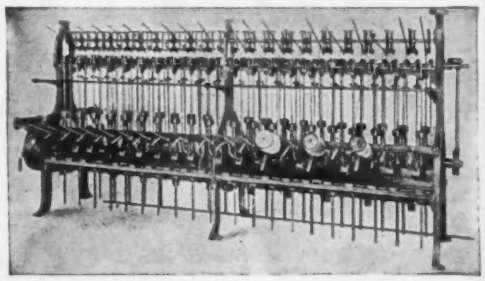
MANUFACTURERS OF TEXTILE MACHINERY.

SOLE MAKERS OF OUR PATENTED SPECIALTIES IN THE UNITED STATES.

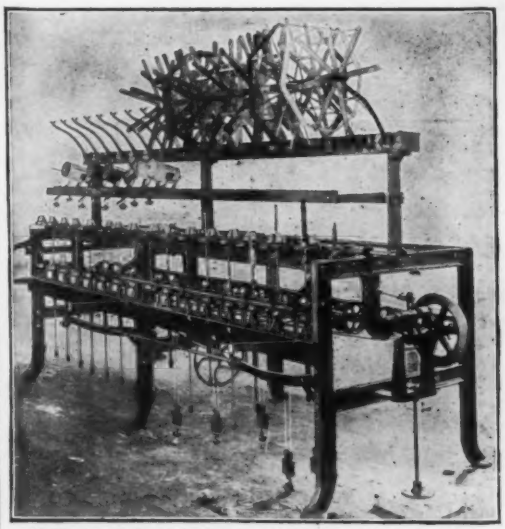


This Machine may be arranged to wind from skeins, spools, cones, or any kind of spinning bobbins. Most suitable machine for cotton or woolen blankets.

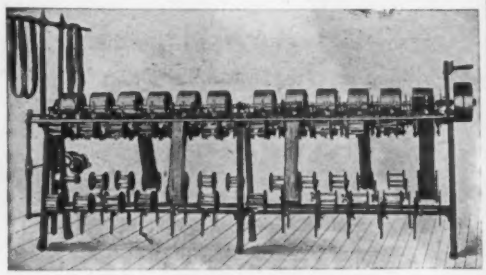
Conical and Parallel Tube Winding Machines; Warping Machines and Creels; Brass Bobbin Winding and other Machinery for lace mills; Chenille Cutting Machines, Sectional Warping Mill, Beaming Machines, etc; Cop Winding Machines for butts to weave from outside; Filling Bobbin or Quill Winding Machines; Vertical Spindle Spooling Machine for silk, fine cotton, wool and worsted; Variable Speed Bobbin Machines for large bobbins used in knitting mills; Dresser Spooling Machines; Reeling Machines.



Vertical Spindle Gear Driven Winder, as used by all manufacturers of heavy duck, jute, cotton, bagging and carpets.



High Speed Cross Quiller to wind from skeins, spools or mule cops on two quills or paper tubes. It is built to run from 1800 to 2400 revolutions.



Pressure Drum Spooling Machine. This machine is adapted for spooling any kind of yarn, whether from mule cops or skeins.

L. E. BARNES, Pres. and Treas.

E. E. Burnham Co.

252 Lowell Street
Lawrence, Mass.

High Class
Mill Supplies

American and Foreign

WHILE OUR LINE COVERS A WIDE RANGE, YET WE ARE ALWAYS READY TO ADD ANY SPECIALTY THAT HAS MERIT.

Twenty Years

of practical knowledge of

Humidifying

Proper results are guaranteed.

During the past TWELVE MONTHS Cotton Mills representing 3,400,000 spindles and 70,000 looms have adopted our system:—and in addition substantial orders have been received from representative WORSTED and SILK MANUFACTURERS.

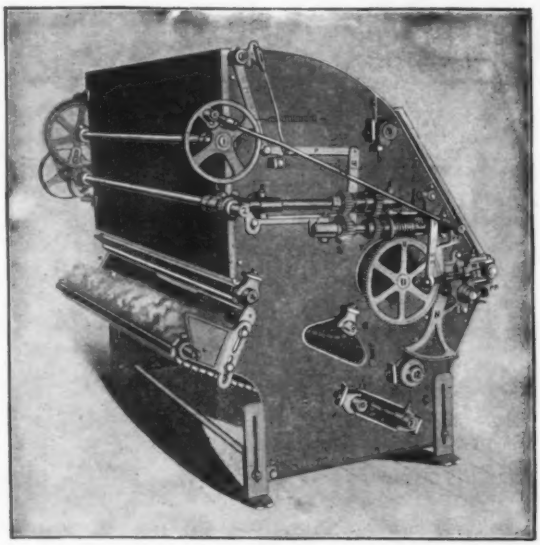
American Moistening Company

79 Milk Street, BOSTON, MASS.

William Firth, President.
Frank B. Comins, Vice. Prest. & Treas.

J. S. COTHRAN, Charlotte, N. C. } Southern Representative.

THE FISHER PATENT CARD FEED



Write Us For List of Mills Where Machines Are Used.

Woonsocket Machine and Press Company

WOONSOCKET, R. I.

STARCH.

Increased efficiency in

WARP SIZING

with LESS COST by using

Adhesive Value:

One pound of "C. P. SPECIAL" contains a sizing value of from one to one and a half pounds of any other starch.

"C. P. SPECIAL" requires no heavying or stocking up after standing.

Sizing Qualities:

"C. P. SPECIAL" dries without sticking on slasher cylinders.

"C. P. SPECIAL" penetrates yarn thoroughly.

"C. P. SPECIAL" increases tensile strength of yarn from 5–10 percent.

"C. P. SPECIAL" boils quickly and produces good, smooth size.

Weaving:

Warps sized with "C. P. SPECIAL" draw in and weave to entire satisfaction.

"C. P. SPECIAL" will not dust off under your looms.

Demonstration:

We are ready to demonstrate in your mill—free of cost—just what "C. P. SPECIAL" will do.

100 lbs. "C. P. SPECIAL" will be sent on request to any responsible Cotton Manufacturer for demonstration purposes.

Corn Products Refining Co., New York, N. Y.

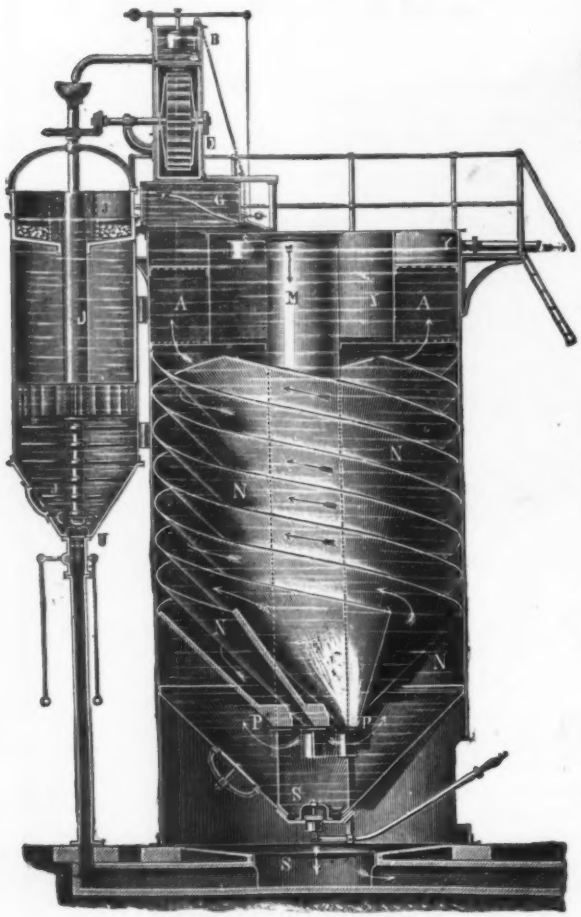
OVER A MILLION GALLONS

Of Our

ARTIFICIALLY SOFTENED WATER

Are used Daily in the Textile Trades, for

Scouring Dyeing Washing Bleaching
Finishing Blueing Rinsing Laundering



Automatic - - - Continuous
Simple - - - Compact

OUR customers therefore, are on an equal footing with those manufacturers who have naturally soft water, and who accordingly are able to produce superior grades of goods, and at less cost, than any user of hard water possibly can.

With the Dodge Automatic Eureka Water Softener and Purifier You are insured against:

1. Lime lakes in dyeing.
2. Uneven shading.
3. Unsatisfactory colors or shading, due to suspended or dissolved impurities (including iron compounds) in the water.
4. Soap and alkali waste.
5. Excessive consumption of dyestuffs.
6. Imperfect results in bleaching.

Used also for Boiler Feeding. This Same Non-Incrusting Treated Water enables you to:

1. Prevent all scale in boilers, heaters, pipes, etc.
2. Cut out expense for compounds and mechanical cleaners.
3. Eliminate cleaning and repair expense due to scale.
4. Greatly reduce the fuel consumption.
5. Increase the efficiency and life of the boilers.

The Eureka System Pays Back its Cost Many Times Over in a Few Years.

It will provide uniform, soft water at all times, regardless of rains and freshets. Settle your vexatious water supply problem now and forever, and stop needless waste. Don't forget to ask for our Book No. 414 when writing.

DODGE MANUFACTURING COMPANY

Department B

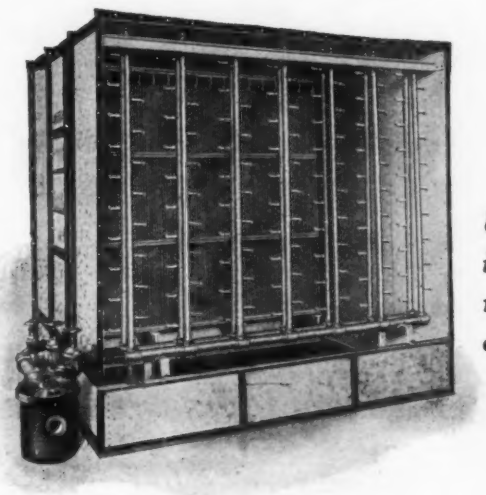
Mishawaka, Indiana

CARRIER

Humidifying and Cooling System

for all Textile Mills

No free moisture to rust machinery



Uniform humidity in all parts of the room at all seasons of the year.

View Showing Nozzle and Spray Chamber.

INSTALLATIONS now in use in Cotton, Silk and Woolen Mills show results hitherto unattained by any other method. Simple. Requires no attention or adjusting. Operates *continuously* and *automatically.*

The Carrier Air Conditioning Company

of America

3 C.

39 Cortlandt Street, New York

The Scientific Practical, Economical Process of Trademarking

¶The Kaumagraph process requires no ink, paint or powder.

¶The impressions are absolutely clear and uniform ON ANY CLASS OR TEXTURE OF FABRIC.

¶The stamps are MADE IN ALL COLORS INCLUDING SILVER AND GOLD and as the color dries instantly, the stamps can be attached as rapidly as the goods can be handled, making this the most rapid process yet devised.

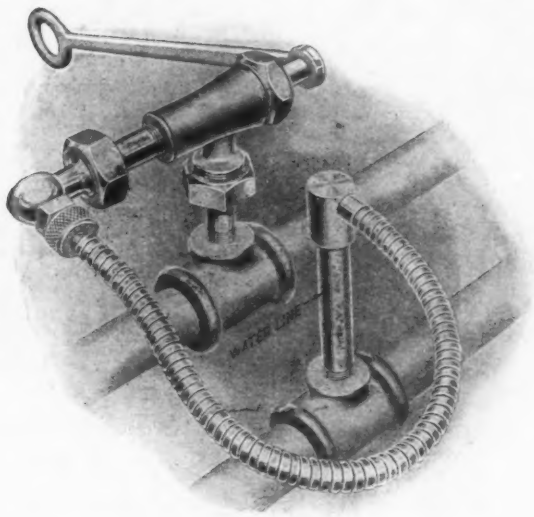
¶The Kaumagraph stamps are being used with satisfactory results by the largest Textile Manufacturers in the U. S. and Canada.

For samples and further information write to

The Kaumagraph Company

156 Fifth Avenue, New York

Turbo-Humidifier



Complete Vaporization

Has been aimed at for years but has never been attained until the Turbo-Humidifier was made.

Invented by a practical mill man it meets all business requirements being small, compact, simple and economical.

TURBO TRADE MARK HUMIDIFIER

Thoroughly Practical
Simple
Readily adjusted
No water used under pressure
Spray is easily regulated

Can be regulated individually or in groups
No light obstruction
Spray does not settle
No moving parts

The G. M. Parks Co., Fitchburg, Mass.

TAPES, BRAIDS AND RIBBONS

for the Mill and Manufacturing Trade

WICK NARROW FABRIC CO.
PRODUCERS OF SPECIALTIES
726-728 Market Street, Philadelphia
Address Department Z

General Electric Company

Textile Mill Economies

Exhaust Steam Turbines——

in the power house afford a highly efficient means of utilizing the exhaust steam from reciprocating engines. Curtis Low Pressure Turbines utilize exhaust steam from 1 pound gauge pressure to any obtainable vacuum, and will add from 70 to 100% to the station output without using additional fuel. These turbines are available in standard sizes from 300 kilowatts up and possess the same characteristics of operation that have made Curtis Steam Turbines the peer of prime movers.

Induction Motors——

in the mill result in reduced operating and maintenance costs, besides increasing the output and quality of the product. Reduced building expenses and increased working space also follow as direct results of the adoption of electric drive. This is due to the elimination of heavy and bulky line shafting and the consequent lighter construction materials required. Of the total power supplied through electric motors to textile mills in this country, 75% is delivered by GE motors. There's a reason.

Tungsten Lamps——

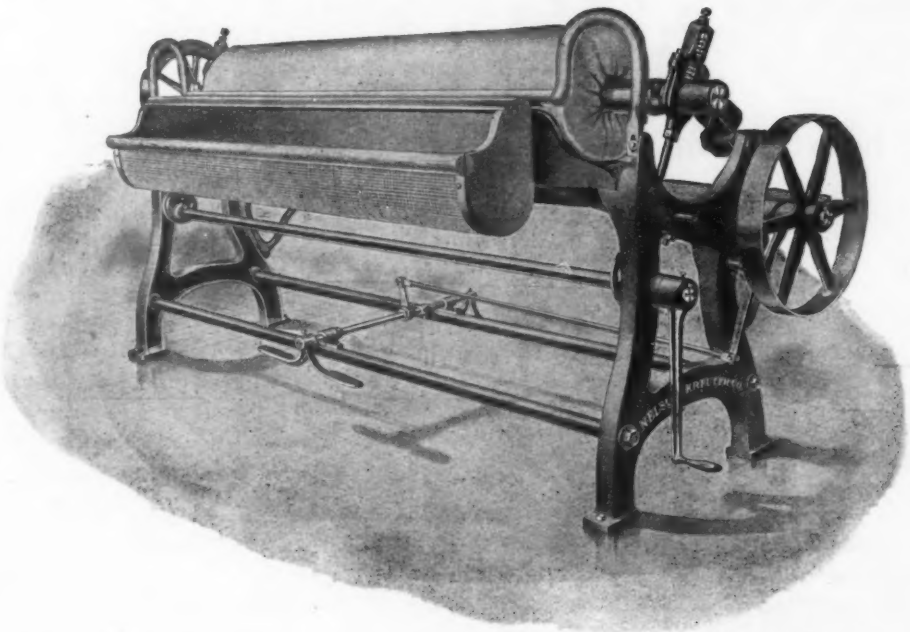
in every part of the mill will give you the same amount of illumination as ordinary incandescent lamps, but will use only *one-third* the amount of current. If you want to get more light without increasing your light bill or if you want to relieve your overloaded lighting plant, GE Tungstens will help you. Furthermore, the quality of the light given by GE Tungstens is almost equal to daylight—the ideal light for textile mills. These are good points to remember when you are considering the lighting question.

Mill Power Department
84 State St.,
Boston, Mass.

Principal Office
Schenectady, N. Y.

Sales Offices in all Large Cities 1875

UNDERWEAR and HOSIERY IRONER



This machine is specially adapted for ironing ribbed and flat underwear and knit goods. The pressure is adjustable and this feature in connection with the padded roll eliminates the possibility of breaking buttons. The machine is very inexpensive to maintain, is easily operated, and gives the goods a smooth, fine finish. Every mill should own one of these ironers.

The American Laundry Machinery Mfg Co

Western Division, 78-80 Franklin St. Chicago

Eastern Division, 132-138 W. 27th St. New York

Southern Division, Station H Cincinnati

FORSYTH BRAIDED HOSE

for Water, Steam, Air, Gas, etc.

SEAMLESS RUBBER TUBE. SPECIAL COTTON YARNS OF GREAT STRENGTH. HIGH GRADE RUBBER THROUGHOUT.

Each ply is a circular braided fabric, seamless and complete in itself. All of the yarns are thoroughly coated with rubber, thus protecting them from mildew and decay.

"FORSYTH" BRAIDED HOSE is immensely strong—Extremely flexible—Practically non-kinkable—Unexcelled for durability. Highly satisfactory and economical from the standpoint of the man who uses it or the one who pays the bills.

RUBBER BELTING
for the transmission of power or conveying materials.

FIRE HOSE—AMERICAN UNDERWRITERS
Trade Mark
Cotton, rubber lined, for outside or yard use.
Linen, unlined, for inside use.

PACKINGS in great variety.

RUBBER COVERED ROLLERS
Adapted for all textile mill uses.

MANUFACTURED BY

BOSTON BELTING CO.

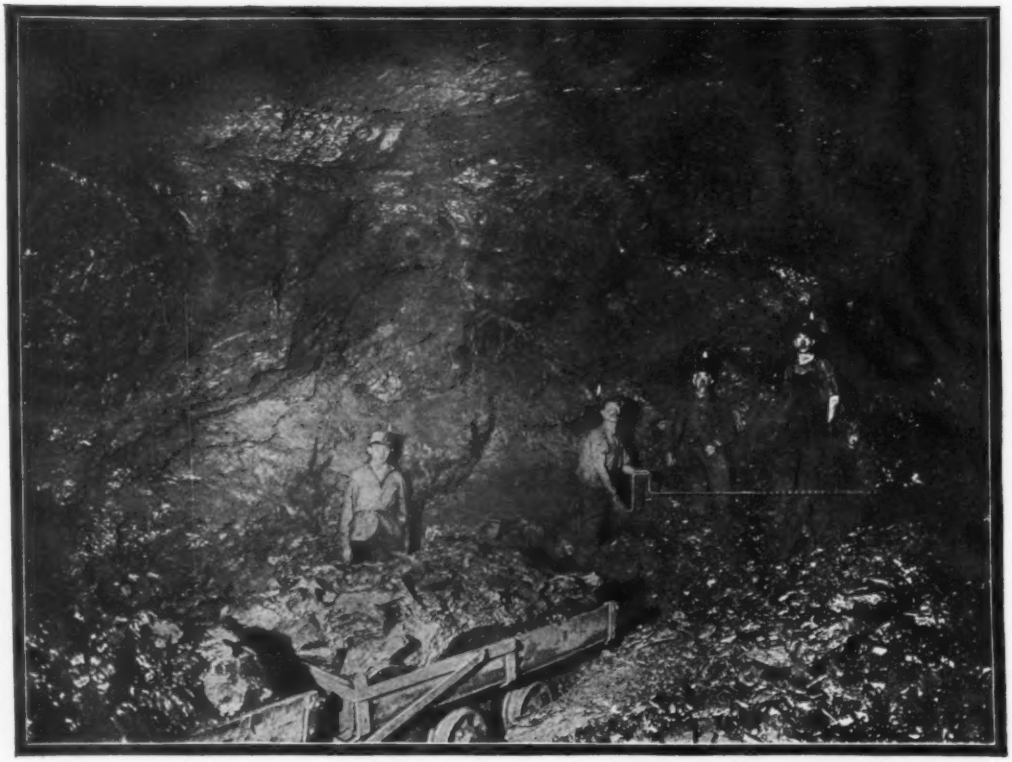
JAMES BENNETT FORSYTH, Mfg. Agt. and Gen'l Manager.

BOSTON 256-260 Devonshire St.
NEW YORK 100-102 Reade St.
BUFFALO 90 Pearl Street

PHILADELPHIA BALTIMORE ATLANTA MOBILE NEW ORLEANS MEMPHIS
CINCINNATI NASHVILLE CHICAGO MILWAUKEE CLEVELAND

Average selling price about $2.00 per ton

A clear profit of over $1.00 per ton for every ton mined. Photograph shows thickness of vein, ease of working, and excellent quality.



"Battle Creek" seam of coal which underlays 7000 acres of coal land in Tennessee owned by this Company.

The Cross Creek 6% Gold Bonds carry with them a bonus of preferred stock, giving a good income return on the bonds and probable very handsome profit on the stock.

Write for particulars.

Cross Creek Coal Company,

1006 Mutual Life Bldg., Buffalo, N. Y.

Cross Creek 6% Gold Bonds

As showing the estimation in which these bonds are held in the coal districts of the South—the best class of investors in Chattanooga, Nashville, Knoxville, South Pittsburg, Rockwood and Jasper, Tennessee and Atlanta, Ga. have recently taken $45,000 of them. Very few of the bonds are now left and the bonus proposition will be withdrawn in the near future. It would be well to correspond with the

Cross Creek Coal Company,

1006 Mutual Life Bldg., Buffalo, N. Y.

The After Effects are Pleasant

Don't waste good belts and lose valuable power.

STEPHENSON Bar Belt Dressings contain no Rosin nor any other ingredients injurious to Belting. Our **RED Label** and **GREEN Label Brands** are two entirely different and distinct preparations. No **one** kind of Dressing is good for **all** Belts—you know that. **STEPHENSON Dressings** not only prevent slipping and give full speed from slack belts, but **the after effects are pleasant**—they KEEP those belts in good condition and greatly prolong their life.

This means a saving in BELTING, which is an important item when figuring the year's expense.

RED Label Brand for Leather Belts.
GREEN Label for Rubber and Canvas.

Your protection against Substitution is **The Man with the Cog-Wheel Face** on each Pound Stick.

Of Dealers everywhere, or

STEPHENSON MFG. CO.

ALBANY, N. Y.

HOW WE ESTIMATE THE COST OF CONSTRUCTION

The cost of any given structure can be accurately estimated only by those who have had experience extending over many years, and who have kept careful records of unit costs during that experience.

For twenty-two years we have kept cost records covering almost every conceivable class of architectural and engineering construction. This information is available to owners intending to build.

It is our practice to prepare a complete schedule and bill of materials from which to estimate the cost of each item in detail. We also have many approximate methods of checking the itemized estimates; for example, estimating the cost of a building by the cubic foot of enclosed space. Our estimating department has actual cubic foot costs of every building that we have ever built.

When we are estimating the cost of any structure, for which complete plans and specifications have been drawn, we estimate every item and unit.

One respect in which our methods differ from the usual practice is that we estimate all portions of the work ourselves instead of calling in subcontractors to give us estimates.

Having done work all over America, we are well acquainted with wages and prices, and know where to obtain the most advantageous labor, in case it cannot be obtained locally. Thus, we do not require any outside or local help in estimating, neither are we hampered by any local combinations of subcontractors or dealers in materials. As we work *only* on the "cost-plus" basis, *this saving goes to the owner*.

We will not accept a "lump-sum" contract nor a "cost-plus-a-fixed-sum-with-a-guaranteed-maximum" contract at any figure, nor under any conditions whatsoever. It must be obvious that we have frequent opportunities to pick up a very desirable "exception" on the "lump-sum" basis with an unusually large amount of profit in it. But we have made absolutely no "exception" since we announced four years ago that we would not deviate from our rule not to accept any "lump-sum" or "guaranteed-maximum" contracts.

Under our cost-plus-a-fixed-sum-contract we act as the construction department for the Owner.

The Owner dictates where and of whom we shall buy our materials. He determines the speed at which he shall have the different portions of his undertaking completed. His decision as to the conduct of the work is final. Any employe of whom he does not approve is dismissed from the job. How could we, under these conditions, guarantee our estimate? Cost-plus-a-fixed-sum would not be what its name implies if we also took "lump-sum" contracts simultaneously.

What protection has the owner if we do not guarantee our estimates? We furnish him with an estimate book and a record of a cost to-date every week. If we are running over our estimate he can order a halt and investigation, and, if he wants to, have the balance of the work let out in the form of subcontracts. Yet this has never happened, because we do not overrun our estimate enough to require such action.

There is still another protection that the owner has; namely, we will secure for him a separate "lump-sum" bid for each portion of the work before we incur any liability whatever. We will then undertake the construction of those portions on which we can demonstrate that we can save money for the owner.

If we can do work for less money than other contractors, why do we not take "lump-sum" contracts and pocket the money ourselves? The answer is very simple; For the last eight years most of our work has been for customers for whom we have previously done work. They, to save time in construction, usually set us to work on the excavating and foundations at the same time that they order their architects and engineers to start making the plans. This work must necessarily be on the "cost-plus" basis because the plans and specifications are not sufficiently completed to make a "lump-sum" contract. From our past experience we do not believe that we can give impartial service to "cost-plus" contracts, if we have "lump-sum" contracts on hand at the same time.

Owners intending to build can obtain additional information of the benefits to the owner under our form of contract by sending for Bulletin No. R2.

FRANK B. GILBRETH

GENERAL CONTRACTOR

FOR ARCHITECTURAL AND ENGINEERING CONSTRUCTION

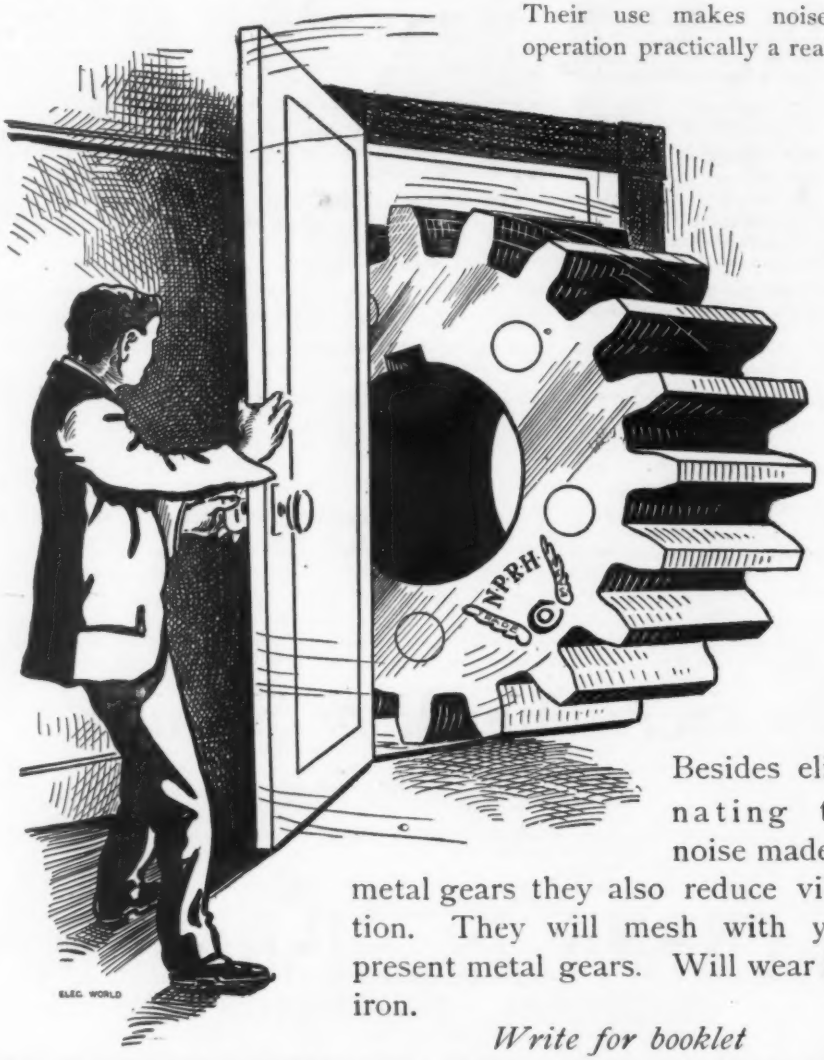
Eastern Office
34 West 26th Street, New York

Western Office
St. Clair Building, San Francisco

Open Your Door to New Process Noiseless Pinions

Once in your plant they will prove their value

Their use makes noiseless operation practically a reality.



Besides eliminating the noise made by metal gears they also reduce vibration. They will mesh with your present metal gears. Will wear like iron.

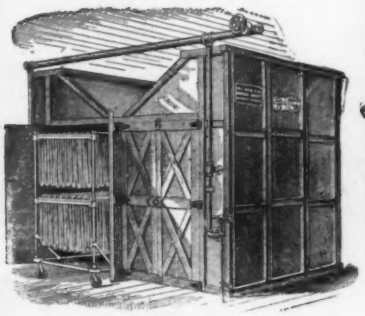
Write for booklet

THE NEW PROCESS RAWHIDE CO., SARACUSE, NEW YORK

"HURRICANE" DRYERS AND FANS

Power Screw Hydraulic and Lever **Presses**

For Wool, Cotton Stock, Yarn, Stockings, Underwear, Etc.



Truck Yarn Dryer.

BELT DRIVEN AND MOTOR DRIVEN

"Hurricane" Fan, Style No. 2. Write for Catalogues.

COMPLETE EQUIPMENTS FOR DYEING, SCOURING, BLEACHING, CARBONIZING, OXIDIZING, CHROMING, Etc.

PHILADELPHIA DRYING MACHINERY CO.

6721 Germantown Ave., Philadelphia, Pa.

Pneumatic Extractor No. 12
Polishing & Grinding Machine No. 13
Lacquering & Surfacing Machine No. 28
Brushing Machine No. 32

BERLIN, LONDON, SHANGHAI, VIENNA, STOCKHOLM, N. PETERSBURG, COPENHAGEN

Schuchardt & Schutte

136 Liberty St., New York

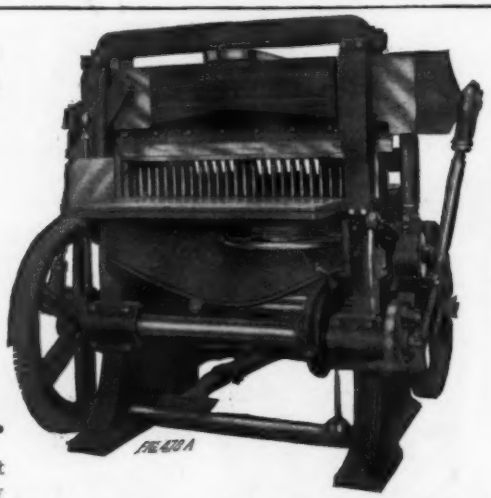
Latest and Best

Wet and Dry Decatizing Machine No. 19

Automatic Platen Press No. R
Stenciling Machine No. E
Astrachanizing Machine No. 35 A
Examination Table No. 100

Pinking Cloth and Cutting Samples on Oswego Cutting Machines

is easy, quick, economical and correct.



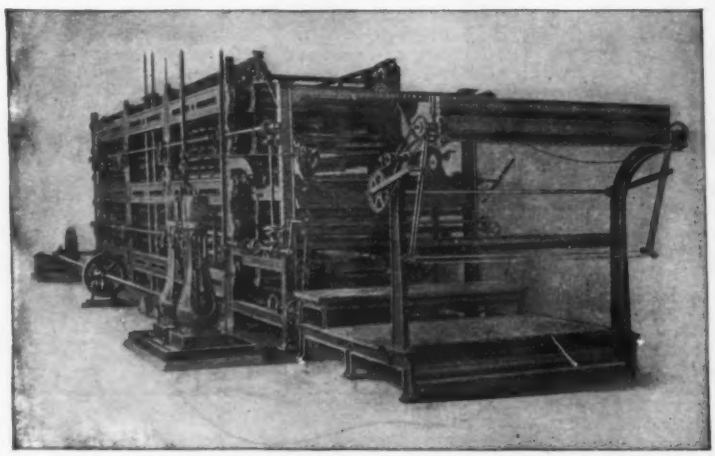
The attractive samples that can be cut on Oswego Cutters bring business. Ninety sizes and styles of Oswego and Brown & Carver Cutters are made. One of these is exactly suited to your present needs. A large number of these machines are in active operation cutting cloth.

Oswego Machine Works, **Oswego, N. Y.**

Niel Gray, Jr., Proprietor.

TENTERING AND DRYING MACHINES

WITH LOW DOWN FEED. **PATENTED FEBRUARY 26, 1895.**



Tentering and Drying Machines on Pipe System. Special Dryers for Heavy Felt Goods. Hot Air Drying and Tentering Machines.

Fulling Mills, Washers, Chinchilla and Whitney Machines, Whipping Machines, Cone Willows, Marsden & Blamire Lap Feed, Dyeing Machines for Piece Goods, Soaping Machines, Wringing Machines, Jigs (Double or Single), Dewing Machines, etc. Crabbing Machines for worsted. Made either single, double or triple.

MANUFACTURED BY

D. R. KENYON & SON, Raritan, N. J. Successors to KENYON BROS.

Long Distance Telephone—Somerville 21.

LAWSONS

Hope Foundry, LEEDS, England

BRANCH OF

Fairbairn Lawson Combe Barbour, Ltd.

MAKERS OF MACHINERY FOR

Preparing and Spinning

Flax, Hemp, Tow and Jute

Special Machinery for the Manufacture of Twines, Rope Yarns and Binder Twine

Good's Combined Hackling and Spreading Machine.

Long Reach Screw-Gill Drawing Frames. Chain-Gill Drawing Frames with Apron Heads.

Patent High-Speed Horizontal and Automatic Spinning Frames for Manila.

Improved Laying Machines.

Haskell-Dawes Tubing Twisters.

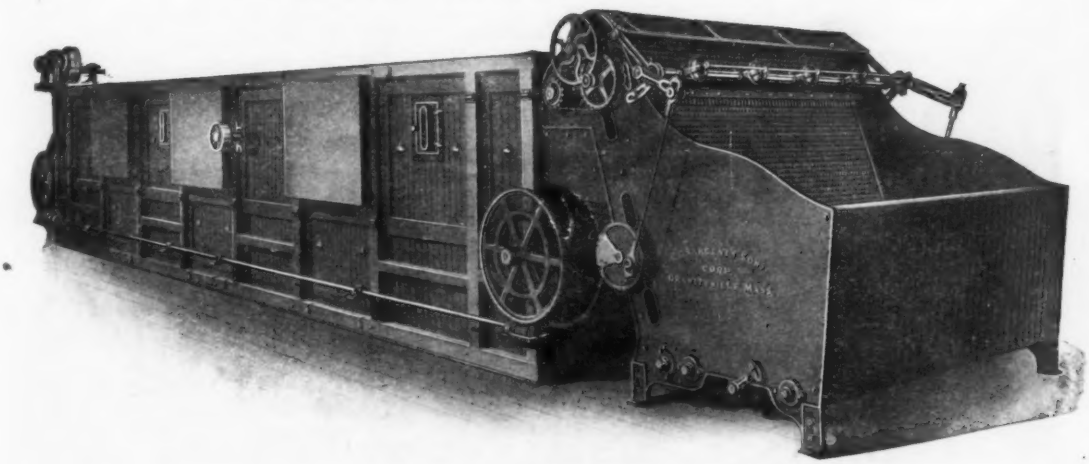
Brownell's Patent Twisting and Laying Machines for Twine.

N. B.—Complete Plans and Estimates for Flax, Tow, Hemp and Jute Mills, Trawl Twine Factories and Steam Ropeworks.

C. G. SARGENT'S SONS

CORPORATION

GRANITEVILLE, MASS.

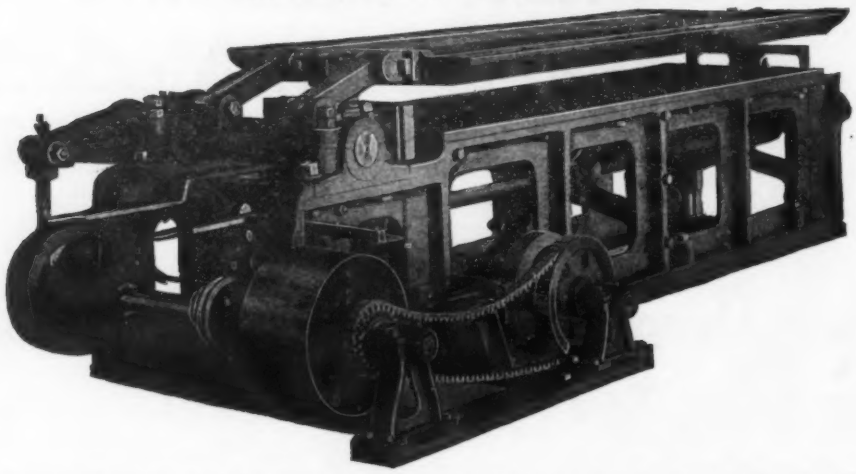


BUILDERS OF

Stock Dryers, Wool Washers, Wool Dusters, Carbonizing Plants, Burr Pickers, Etc.

Farrel Foundry & Machine Co.

ANSONIA, CONN.



SINGLE AND DOUBLE FELT HARDENERS.

Chilled and Soft Iron Rolls. Heavy Transmission Machinery.
Machine Moulded and Machine Cut Gearing, to 20 ft. diameter, Etc., Etc.
Heavy Castings, in Gray Iron or Semi Steel.

Cloth Washers, Dye Tubs, Vats, Fulling Mills,
Piece Dyeing Machines, Special Machinery,
Brass Founders, Tanks, To Order.

Hopkins Machine Works, Inc.

BRIDGETON, R. I.

Providence Office, 49 Westminster St.

Spindles and Flyers, for Cotton, Wool, Silk, Flax, etc.

Send for our latest Catalogue and Price List

Dye Tub Valves, Cloth Guides, etc. Bronze or Porcelain Rings.

The Sentinel Electric Warp Stop Motion

with spring wire detector head for plain weaves.

Each detector wire controls two threads making this Stop Motion especially adapted for high sley goods. The position of the broken end is distinctly indicated.

WE CALL SPECIAL ATTENTION TO OUR

New Drop Wire Warp Stop Motion

for both plain and fancy weaves

Each detector wire controls a single thread and clearly indicates the position of the broken end. By a new form of drop wire, positive contact is assured and maintained, insuring instant stopping of the loom.

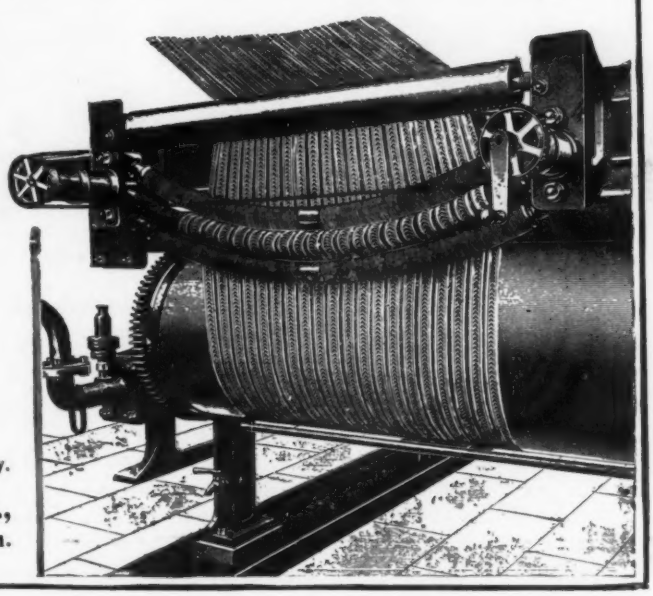
American Textile Appliances Co.

William Firth, Treas. **79 Milk St., Boston, Mass.**

Perfectly Even Tension Both Ways

THIS ideal cloth expander gets the full width of the goods in a most satisfactory way. Can be attached to calenders or cans. Hundreds in use in Great Britain and on the Continent—hundreds more in the United States, with constant satisfaction.

Manufacturers unsolicited say to us, "You have the greatest thing in a spreader ever brought to our attention."



We put them in on trial.
Test it on your own work—'t will pay.

Thomas Leyland & Co.,
60 India St., - - - Boston.

WM. FIRTH, Pres. EDWIN BARNES, Vice-Pres. JOHN H. NELSON, Treas.

WILLIAM FIRTH CO.

Post Office Square Building 79 Milk Street, BOSTON, MASS.

. . SOLE IMPORTERS OF . .

ASA LEES & CO., Limited,

TEXTILE MACHINERY,

OF EVERY DESCRIPTION FOR COTTON, WOOLEN AND WORSTED.

SOLE AGENTS FOR

JOSEPH STUBBS, Gassing, Winding and Reeling Machinery for Cotton, Worsted and Silk.
GEO. HATTERSLEY & SONS, LTD. Makers of every Description of Looms, etc.
JAMES MACKIE & SONS, LTD., Makers of Flax, Tow, Hemp and Jute Preparing and Spinning Machinery.
GEORGE ORME & CO'S Patent Hank Indicators, etc.
JAMES YATES & SON, Hardened and Tempered Steel Card Clothing for Woolen and Worsted Cards.
LOCKETT, CROSSLAND & CO., Engravers and Builders of Leather Embossing Machinery, etc., etc.
R. CENTNER FILS, Heddles.
GOODBRAND & CO., Yarn Testing Machinery, Wrap Reels, etc.
JOSHUA KERSHAW & SON, Roller Skins, etc.
GEORGE SMITH, Doffer Combs, etc.
BRADFORD STEEL PIN CO., Comber Pins.
CLAPHAM, SMITH & CO., Caps, Tubes and Spindles for Worsted, etc.

ALSO AGENTS FOR

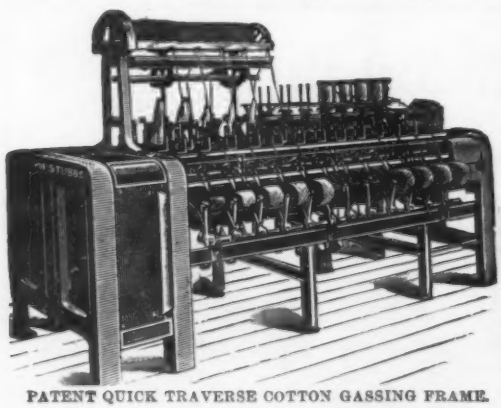
JOSEPH SYKES BROS., Hardened and Tempered Steel Card Clothing for Cotton.
WILLIAM TATHAM & CO., Waste Machinery.
DRONSFIELD BROS., Limited, Emery Wheel Grinders. Emery Fillet and Flat Grinding Machines.
COTTON CORD AND VELVET CUTTING MACHINE CO., Corduroy Cutting Machines, etc.

PICK GLASSES, LEATHER APRONS, PATENT WIRE CHAIN APRONS.

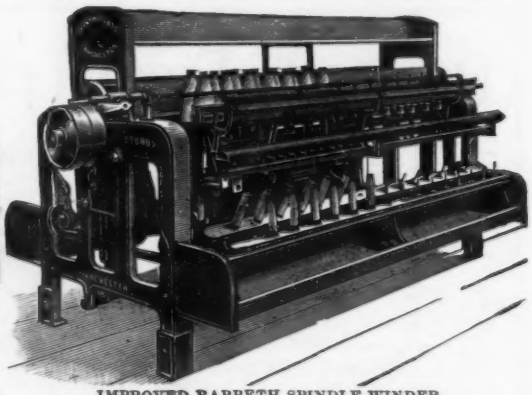
JOSEPH STUBBS - - Manchester, England.

SPECIAL MACHINERY

For Winding, Gassing, Reeling, Preparing, Polishing and Bundling Yarns.



PATENT QUICK TRAVERSE COTTON GASSING FRAME.



IMPROVED RABBETH SPINDLE WINDER.
With Patent Tapering Motion, for Single Flanged Bobbins.

Sole Agents for the United States and Canada.

WILLIAM FIRTH COMPANY, Post Office Square Bldg., 79 Milk St., BOSTON, MASS.

DOBBIN'S ELECTRIC SOAP, ABSOLUTELY PURE AND UNIFORM.

Dobbins' Hard Water Soap, a Specific for Hard Water or Water Charged with Chemicals.

AMMONIATED POTASH SALTS FOR SCOURING.

Dobbins' Palm Oil Fulling Soap. Dobbins' "Fast Black" Soap. Pure Olive Oil Potash Soaps.

FREE SAMPLE SENT FOR TRIAL ON REQUEST.

DOBBINS SOAP MANUFACTURING CO., 119 SOUTH FOURTH STREET, PHILADELPHIA, PENN.

DINSMORE

Mill Sewing Machines

No. 9.—Portable Foot-Power Rotary Sewing Machine

It is especially adapted for use in Cotton and Woolen Mills, Bleacheries, Print Works at the Printing Machines, in Dye Works, Cloth Rooms, at the Fulling Mill, Shears, Calendars, Gigs, Drying Machines, etc., or any of the different finishing processes in textile mills.

Manufactured by the

DINSMORE MANUFACTURING CO.,

Salem, Mass., U. S. A.

1866 1908

HARTFORD STEAM BOILER INSPECTION AND INSURANCE CO. HARTFORD, CONN.

41st Annual Statement

January 1, 1908

Capital, $1,000,000.00
Surplus, 1,006,868.06
Reserves, 2,053,326.74
Assets, 4,060,194.80

The HARTFORD was the Pioneer Company in the field of Steam Boiler Insurance, and it is the only company which makes a specialty of and does exclusively a steam boiler inspection and insurance business.

The HARTFORD is the only company whose entire talent and energies are applied to the study of steam, to the scientific construction and installation of boilers, and to their periodical inspection by expert mechanics.

The HARTFORD is the only company whose entire assets and resources are held exclusively for the protection of steam users, and the payment of losses occasioned by the explosion of steam boilers and for no other hazard whatsoever.

The HARTFORD is now doing nearly nine-tenth of the Inspection and Insurance of Steam Boilers in the New England States, and nearly two-thirds of the entire amount done throughout the United States.

L. B. Brainerd, President and Treasurer.
F. B. Allen, Vice-President.
C. S. Blake, Secretary.
L. F. Middlebrook, Assistant Secretary.

Hartford, Conn.

SPINDLES

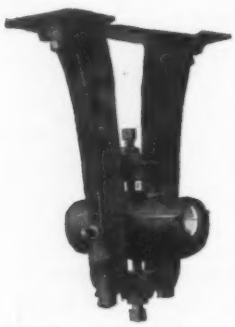
EASTON AND BURNHAM MACHINE CO.

PAWTUCKET, R. I.

REPAIRS FOR RABBETH SPINDLES

CRESSON

POWER TRANSMITTING MACHINERY



RING OILING HANGER
"PHILADELPHIA PATTERN"

Shafting Pulleys
Couplings Fly Wheels
Hangers Gears

Rope Driving a Specialty

Power Plants Designed and Equipped

Prices Right Shipments Prompt
Catalogs for the asking

CAST IRON
SPLIT PULLEY

GEO. V. CRESSON CO.

ENGINEERS FOUNDERS MACHINISTS

(WORKS) PHILADELPHIA, PA. NEW YORK CITY

7 REASONS

Why Woolen Yarn Spinners will find Distilled Wool Grease Oleine the Best and Most Natural Oil to use

N. B. Owing to the present condition of the Olive Oil market, we omit our usual detailed statement of the above **7 Reasons** in order to make a special announcement of our

RECOVERED OLIVE OIL

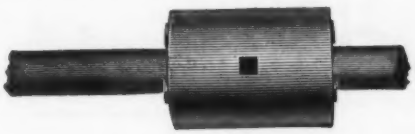
Not an OLEINE, but a pure distilled recovered oil, which can be used wherever OLIVE OIL is used.

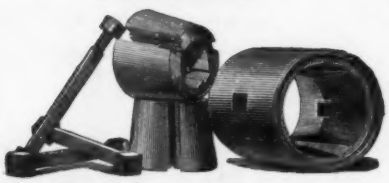
SAMPLES FURNISHED UPON REQUEST.

H. G. McKerrow Co., Ltd., 88 Broad Street, Boston, - Mass.

IMPORTERS OF

Cotton Machinery, Special Wool Oils, Liquid Soluble Soap, Etc.





THE "SELLERS" MAKE OF

DOUBLE CONE VISE COUPLING

has a way of holding shafts together, that no other COUPLING can equal.

WILLIAM SELLERS & CO., INCORPD.

PHILADELPHIA, PA.

Makers of

SHAFTS,
COUPLINGS,
PULLEYS,
HANGERS,

and all most approved appliances for the Transmission of Power.

SEND FOR CATALOGUE AND PRICE LIST.

MACHINE TOOLS.
INJECTORS. POWER CRANES.

Patented in the United States and Foreign Countries.

The American

WROUGHT STEEL

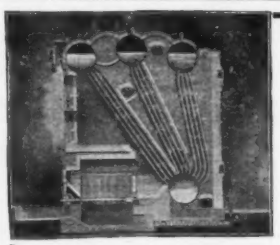
PULLEY

Is a parting PULLEY and can be applied without stripping the shaft.
It is Light, STRONG, and lasts a lifetime.
It clamps to the shaft perfectly—keys and set-screws superfluous.
Interchangeable metal Bushings to fit shafts of different sizes.
Particularly adapted to TEXTILE manufacturing.
Sold by the Leading Supply Houses all over the WORLD.

Send for Booklet.

The American Pulley Company

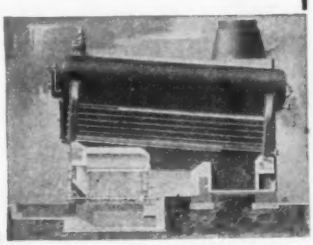
29th and Bristol Sts., Philadelphia, Pa.



The Murphy Automatic Smokeless Furnace

Burns Slack with Great Economy

The Murphy can be installed under any type of fire-tube or water-tube boiler and to units of any size.



SETTING UNDER TWO TYPES OF BOILERS SHOWN HEREWITH

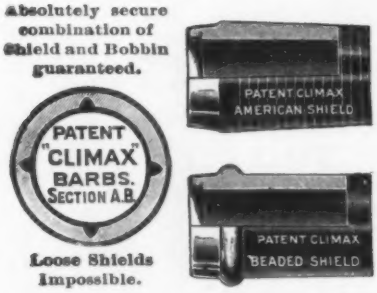
MURPHY IRON WORKS

DETROIT, MICH.

WILSON & CO., BARNSLEY, Limited

BARNSLEY, ENGLAND.

Absolutely secure combination of Shield and Bobbin guaranteed.



Loose Shields Impossible.

TRADE MARK.

Specialties: PATENT "LOCKFAST" and "CLIMAX" Shields. ENAMELLED CONDITIONING BOBBINS, Impervious to Steam, Moisture or Oil.

GOLD MEDAL St. Louis, 1904. DIPLOMA d'Honneur Liege, 1905 Highest Awards for Bobbins.

Added Strength and Absolute Security.

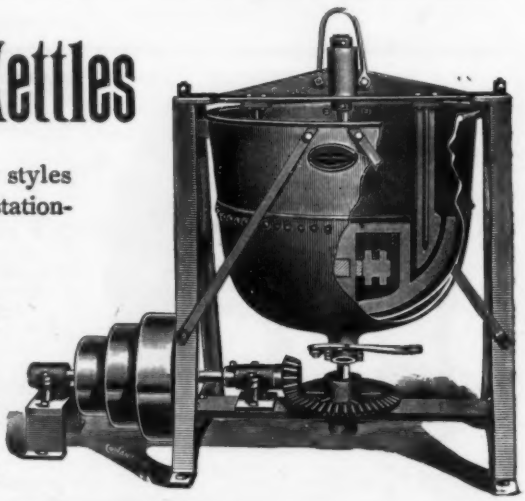
Samples and Prices on Application.

SPEED & STEPHENSON, Agents for U. S., 170 Summer St., Boston, Mass.

Established 1841.

Steam Jacket Mixing Kettles

This cut represents one of our many styles of steam mixing kettles, made with stationary and removable stirrers.

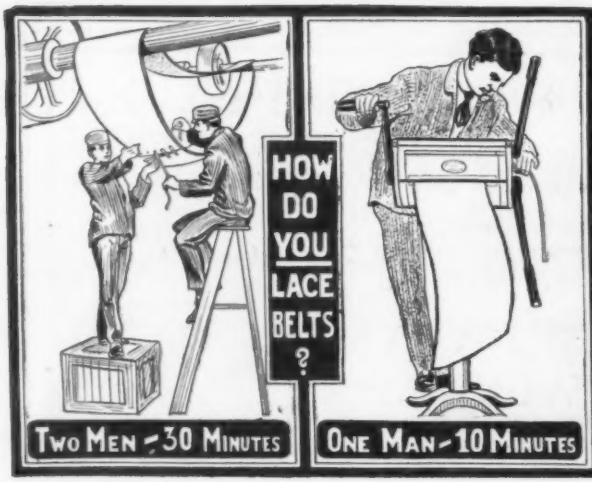


E. B. BADGER & SONS CO.,

COPPERSMITHS,

66 Pitts St., - BOSTON, MASS.

Badger Fire Extinguisher.



The Jackson Belt Lacer

operated by one man laces a 20 inch belt in ten minutes, other widths in proportion. How long does it take in your shop?

The Jackson **Joint** consists of intermeshing steel wire lacing, connected or disconnected in a second, by inserting or withdrawing a raw hide pin. It saves time and expense, not only because a splice can be made quickly, but because the connection is so neat and durable that the belt is not apt to break again at the same place and its life is thereby greatly lengthened. Every shop needs the JACKSON BELT LACER. Write for booklet.

BIRDSBORO STEEL FOUNDRY & MACHINE CO., Birdsboro, Pa.

WILLIAM FIRTH, Pres. THE FRANK B. COMINS, Vice-Pres. and Treas.

AMERICAN MOISTENING COMPANY

79 Milk Street, Boston, Mass.

Received the HIGHEST AWARD on recommendation of the FRANKLIN INSTITUTE for

"Simplicity and Originality of Design."

Is the largest manufacturer of HUMIDIFIERS in the World. The last twenty years receiving the HIGHEST AWARD in this country and Europe for its AIR-MOISTENING SYSTEM. EIGHT GOLD MEDALS and others.

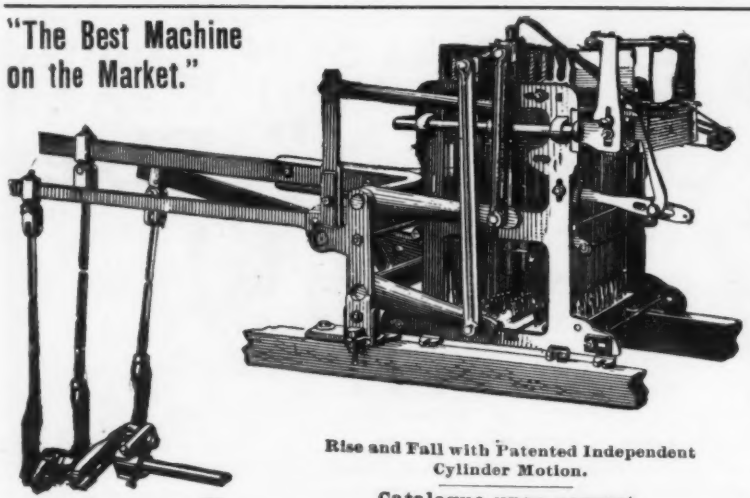
The Only Perfect System of Air Moistening

Has Been Adopted by the Representative Manufacturers of this Country.

The only System adopted in the Textile Schools. Write for booklet "T" on Humidification.
Legal proceedings will at once be taken against infringers and users of infringements.

J. S. COTHRAN, Southern Representative, Trust Bldg., **CHARLOTTE, N. C.**

"The Best Machine on the Market."



Rise and Fall with Patented Independent Cylinder Motion.

Catalogue upon request.

USE THE

HALTON JACQUARD

Original Fine Index Machines

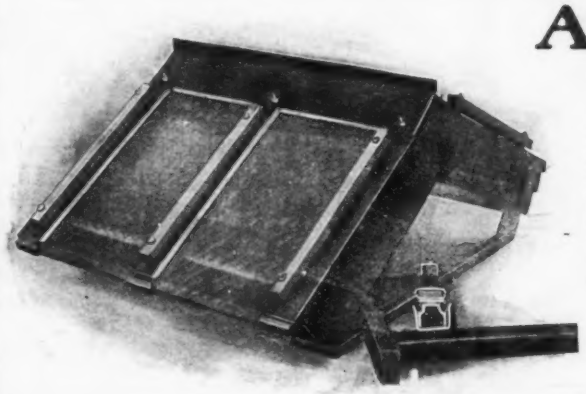
Single Lift, Double Lift, Double Cylinder, Rise and Fall, Crossborder,

THOMAS HALTON'S SONS,

Allegheny Avenue and C Street,

PHILADELPHIA

Representative
H. A. Forbes, Paterson, N. J.



Anti-Pluvius Skylights

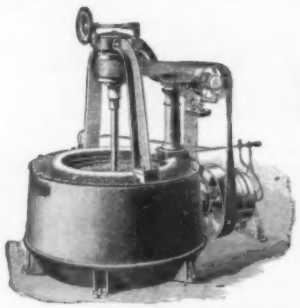
are easily erected and kept clean. Cost less to maintain than ordinary forms of construction. Anyone can erect. No putty or cement required. Felt rest for glass. Bridge for walking on.

Prices are reasonable.

Write today for all the facts about Anti-Pluvius Skylights.

The G. DROUVE CO.,
Bridgeport, Conn.
Western Office, 40 Dearborn St., Chicago.
Manufacture also
The Lovell Window Operator

Hydro-Extractors, Exhaust Fans, Dye Tanks and Tubs

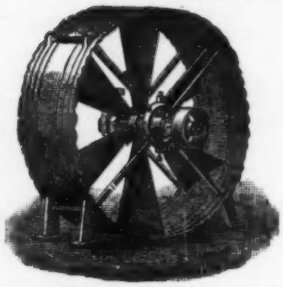


Adjusts itself to an uneven load, runs without vibration
Unusual capacity for high-class work

Bridger Hydraulic Cutting Press

Send for Catalog

Tolhurst Machine Works
Fulton St., and 6th Ave., Troy, N. Y.



Moves more air than any other fan made. Very efficient under widely varying conditions. Noiseless and does not obstruct the light

WILLIAM BODDEN & SON, Limited

The "BODDEN" Flyer

For QUALITY OF FINISH
For QUANTITY of PRODUCTION
HAS STOOD THE TEST OF YEARS

Sole Agents for U. S. A.

Thomas Mayor & Son, Olney Street, Providence, R. I.

ONEIDA

STEEL PULLEYS WILL SOLVE YOUR PULLEY PROBLEM FOR ALL TIME.
NOTICE THE DESIGN AND CONSTRUCTION.

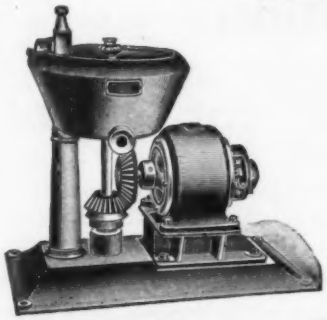
THEY ARE BUILT TO FILL ALL CONDITIONS OF SERVICE AND EXCEL IN DURABILITY AND EFFICIENCY. THEY ARE LIGHT, STRONG AND ARE PERFECTLY RIGID.

MADE IN WIDEST RANGE OF SIZES OF ANY STEEL PULLEY IN THE WORLD.
DIAM.—6 TO 104 IN.
FACE.—3 TO 40 IN.
BORE—1 TO 8 IN.

SOLD BY MILL SUPPLY HOUSES EVERYWHERE SEND FOR OUR LATEST CATALOG AND DESCRIPTIVE MATTER SHOWING CONSTRUCTION ALSO ILLUSTRATIONS OF LARGE SIZES.

Oneida Steel Pulley Co.,
Oneida, N. Y.

ELECTRICALLY DRIVEN



CENTRIFUGAL

Oil Separator

MOTOR WOUND FOR ANY VOLTAGE.

Separates oil from bolts, nuts, and scraps of all kind—oil that would otherwise be wasted, and makes it as good as it ever was, for further use. **Send for Catalogue.**

MANUFACTURED BY THE

American Tool & Machine Co.,

109 Beach Street, Boston, Mass.

Incorporated 1864. Founded 1845.

SALEM ELEVATOR WORKS

SALEM, MASS.

ELEVATORS

ESPECIALLY ADAPTED FOR MILL USE.

SEND FOR ILLUSTRATED CATALOGUE AND ESTIMATE.

There is no use to which baskets are put wherein conditions are more trying than in a textile mill.

There is no basket which so admirably makes good under such conditions as the

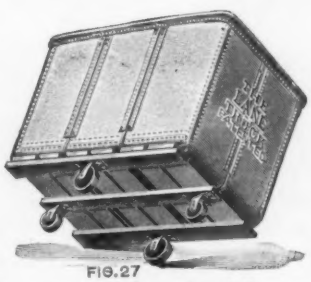


FIG. 27

Lane Steel Frame Canvas Basket

Sold direct or through principal supply houses. See our descriptive catalog and price list No. 37.

MANUFACTURED ONLY BY

W. T. LANE & BROTHER, Office and Works **Poughkeepsie, N. Y.**

Spontaneous Combustion

eliminated by the use of

Breton Oil for Wool

Wool oiled with "Breton" can be stored for months without loss or danger of spontaneous combustion. Cards and spins as well as the day it was oiled. The use of "Breton" oil insures fine, even perfect yarn.

Trial barrel sent on approval.

BORNE, SCRYMSER & COMPANY
80 South St., New York
Boston Fall River Philadelphia Works: Claremont, N. J.

"AMERICAN" MACHINE TOOLS

FOR HIGH CLASS AND QUICK MACHINERY REPAIRS IN YOUR OWN PLANT

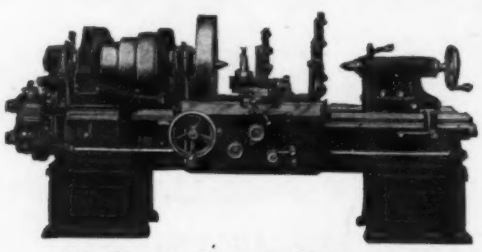
WONDERFUL SAVING POSSIBLE

CATALOG "N" NOW READY

THE AMERICAN TOOL WORKS CO.

300 TO 350 NEW ST., CINCINNATI, U. S. A.

PLANERS, LATHES, SHAPERS, RADIAL DRILLS



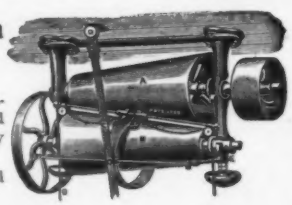
24 in. "American" Lathe, Double Back Geared, 3 Step Cone. Belt or Motor Driven

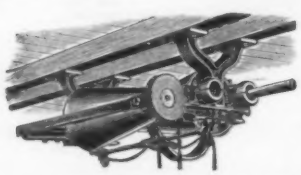
Variable Speed Countershafts

The Evans Friction Cone Pulleys

will drive your machines at any desired speed from 1 to 6 by simply pulling a cord.

They are guaranteed to do your work.





We'll furnish them for either floor or hanging use.

Over Ten Thousand Sets in Operation in this Country and Europe.

Send for Catalogue.

EVANS FRICTION CONE COMPANY
G. Frank Evans. Newton Center, Mass.

Eureka Fire Hose

THE BEST FIRE HOSE MADE.

(Trade Mark.)

For use in

Cotton Mills, Woolen Mills and Factories.

Seamless Woven and Rubber lined EUREKA COTTON HOSE, has no equal. Send for circular and testimonials.

Awarded Gold Medal at the St. Louis Exposition, 1904.

EUREKA FIRE HOSE MFG. CO.
13 Barclay St., New York, N. Y.

Loose steam—lost dollars

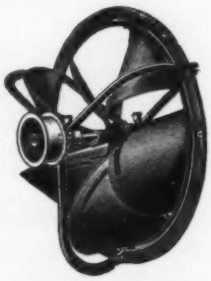
get rid of that dollar-wasting fog. Clear up the atmosphere of your dye house with a

Berry Wheel

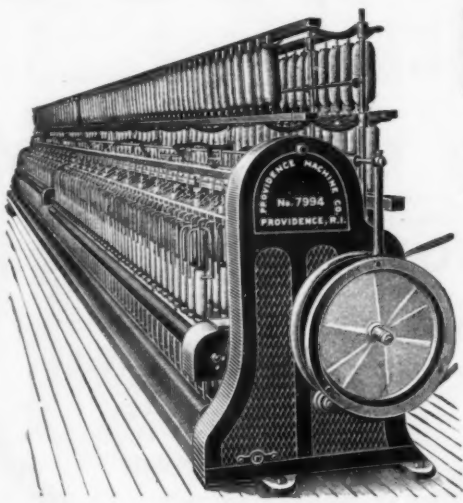
get a better product and more of it by improving the working conditions.

Very efficient and economical for drying.

This is our Berry Wheel, the most effective agent for moving air, eliminating steam and other impurities in the atmosphere.



A. HUN BERRY,
23 West First Street
BOSTON.



Providence Machine Co.

Manufacturers of

Improved Cotton Roving Frames

Improved Worsted Roving Frames

564 Eddy St., - - PROVIDENCE, R. I.

Crabbing, Steam Finishing, Opening and Folding, Tacking, Sewing, Squeezing Machines

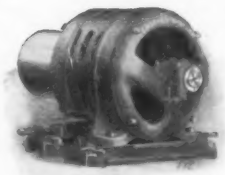
BIRCH TREE

BIRCH BROTHERS, SOMERVILLE, MASS.

ALBERT BIRCH, TEXTILE MECHANICIAN

BIRCH TREE

Bleaching and Napping Machinery



15 to 200 H. P.

We are thoroughly familiar with the electric requirements of textile mills.
This is one reason why **C-W** induction motors make good in this field.
Crocker-Wheeler Company, Ampere, N. J.

Use Sable Belting on your Hardest Drives

It saves buying belt dressings.
It saves the time of men and machines.
It saves more power, and
It saves bearings and belts

as compared with belts that must be tightened with every change of weather, or those which must be replaced at short intervals because of their non-durability due to being run too tight.

Other facts in our Belt Book "No. 6." Get a SABLE BELT for a month's free trial.

SHULTZ BELTING COMPANY,
St. Louis, Mo.

New York Boston Philadelphia
No. 30

No Waste

No Drip

IT DOESN'T PAY

To save dimes in the cost of a lubricant— and lose dollars in the efficiency of the shop—

HOWARD GREASE

costs a little more in the first place—but lasts three times longer than the ordinary kind.

REMEMBER

Howard Grease is not affected by temperature —one application lasts from eighteen months to two years. Better write for catalog No. 11.

OLNEY & WARRIN
66-68 Center St.
New York

Geo. W. Gerry & Son, ATHOL, MASS.

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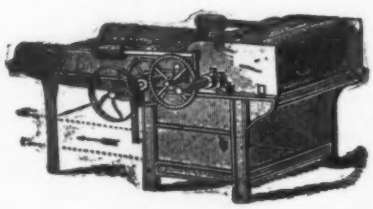


Lumpers,

Wool and Waste Dusters,
Rag Dusters, Nappers.
Improved Cloth Measuring Machines.

Lumper and Duster Cylinders Refilled and Repaired.

The Best That Money Can Buy

SPINNING RINGS.
TWISTER RINGS.
RING HOLDERS.
TRAVELER CUPS.
SILK RINGS.
TRAVELER CLEANERS.

Correspondence Solicited.

WHITINSVILLE SPINNING RING CO.,

WHITINSVILLE, MASS., U. S. A.

THE ONLY

Seamless Hard Fibre Roving Can.

Made from pure Vulcanized Hard Fibre, without seams or rivets, absolutely smooth, and the most perfect roving can ever produced.

Furnished with our Seamless Hard Fibre Kicking Band, metal or smooth turned fibre tops and metal bottoms.

WE ALSO MAKE A HIGH GRADE OF

Cordage Cans	**Comber Boxes**
Oval Cans	**Doffer Boxes**
Waste Cans	**Bobbin Boxes**
Gill Cans	**Trucks and Cars**

Write for prices.

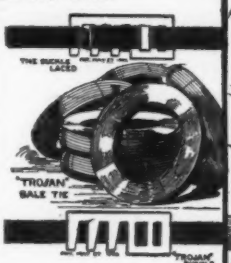
STANDARD FIBRE CO.
SOMERVILLE, MASS.

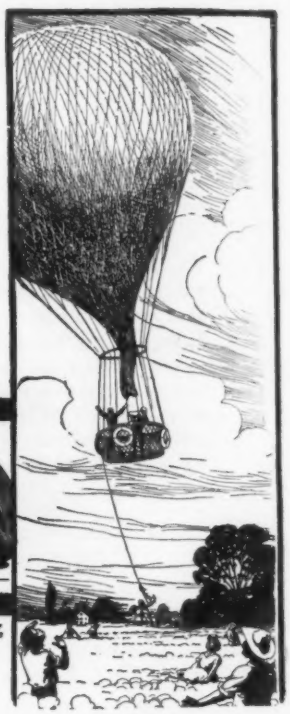
If you are using rope for baling you are helping to pay the gas bill to keep rope prices balloon high.

Rope is up—*Trojan Bale Tie* and *Band* is down.

Trojan Band is made plain or galvanized in coils from 2000 to 3000 feet without a break. Widths ½, ⅝, ¾ and 1 inch.

With the present high prices of rope Trojan Band and Buckle is a money saver.





De Haven Mfg. Co.
Brooklyn, N. Y.
Chicago, Ill.

NEW ENGLAND BUTT COMPANY,

304 PEARL ST., PROVIDENCE, R. I.

BRAIDING MACHINERY

ALL STYLES AND KINDS FOR FLAT AND ROUND BRAIDS.

SOLID SASH AND CURTAIN CORDS,

SHOE AND CORSET LACES, BANDING

AND ALL BRAIDED FABRICS.

A. H. Howard, Pres. ESTABLISHED 1866. Herbert Midgley, Supt.

A practical test will convince you we can furnish the

BEST

COTTON or WOOL

CARD CLOTHING

Howard Bros. Mfg. Co.

144 and 146 Vine Street, WORCESTER, MASS.

Competition is keen in the textile field

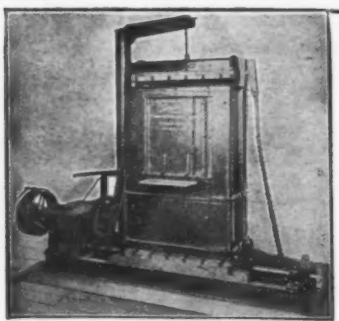
The manufacturer, to be successful, must take advantage of every modern method that will increase the quantity and improve the quality of his product without increasing its cost. A sure means towards this end, and one easily applied, is Individual Electric Motor Drive. It does not mean remodelling your plant; a wire can be strung anywhere.

Ask Westinghouse Electric

Westinghouse Electric & Mfg. Co.

Atlanta Charlotte Philadelphia
Boston New York and other large cities

MAURICE GANDY FOUNDER OF THE GENUINE RED STITCHED COTTON DUCK BELTING.
GENUINE
GANDY
Some parts of a textile plant—dyeing and bleaching rooms especially, are *damp* and contain *acids* and *acid vapors*. In these places you need
Candy Red Stitched Cotton Duck Belts
because neither water, steam or acids can harm them, and they run as straight and true, cling as closely to pulleys, and last as long under these conditions as though they were receiving the finest possible care. *Cost but 1-3 that of leather.* Booklet: "Experiences with Gandy" free on request. It always interests belt users.
(*Gandy Belt Dressing* gives the last touch of perfection to Gandy Belts.)
THE GANDY BELTING CO.
BALTIMORE, MD.



Our Latest Improved Steel Power Press with New Steel Link Chains

Minnich Baling Press

for all kinds of products.

Must turn out more bales with less labor and power than any press in the market.

Send for circular.

Minnich Machine Works,

Lancaster Co. Landisville, Pa.

DEAN BROS. STEAM PUMP WORKS

INDIANAPOLIS, IND.

DUPLEX PUMPS, SIMPLE PUMPS
ATLANTIC BOILER FEEDERS
JET AND SURFACE **CONDENSERS** ELECTRIC PUMPS BELTED PUMPS, Etc.

VERTICAL AIR PUMP AND JET CONDENSER

DUPLEX DURABLE PUMP

SIMPLE PUMP

TWIN AIR PUMP AND CONDENSER

Our order work is a great success. We don't guess—we TRY HARD. Our specially-made

LOOM PICKERS

are therefore right—the first time and other times.

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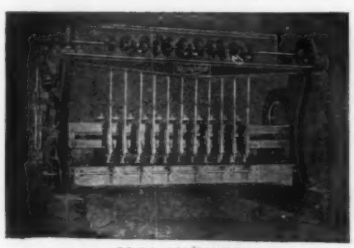

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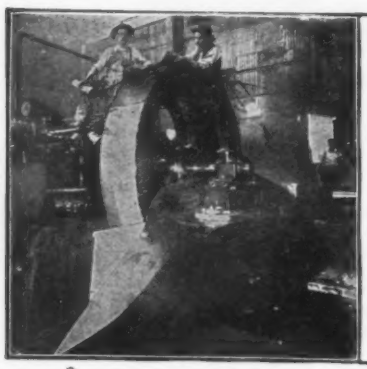

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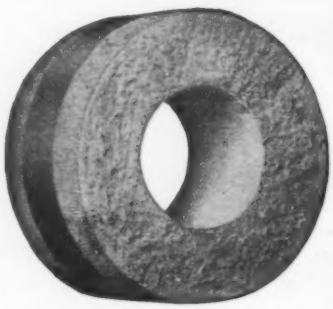

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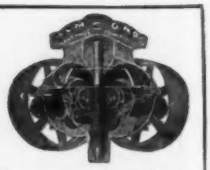

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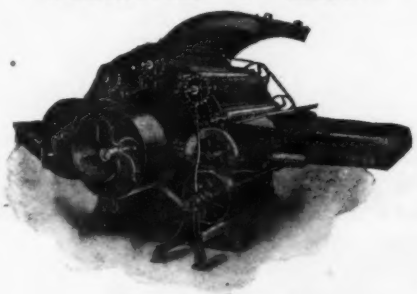

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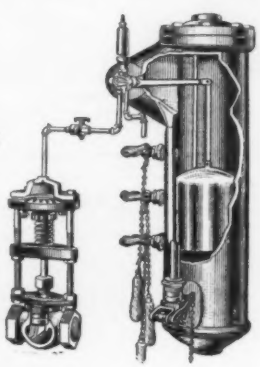

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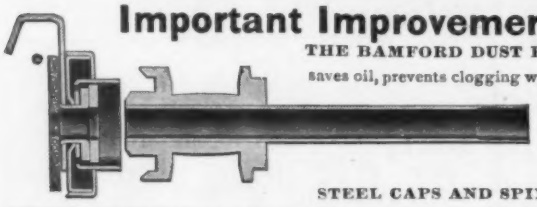

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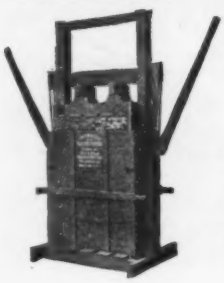

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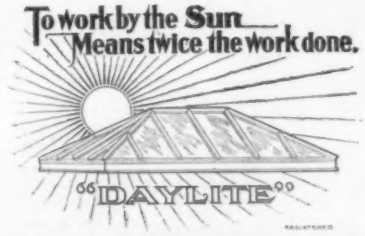

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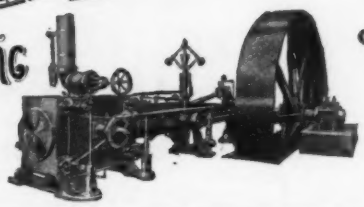

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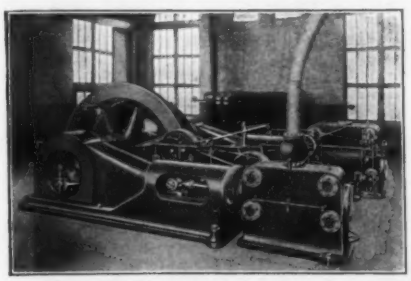

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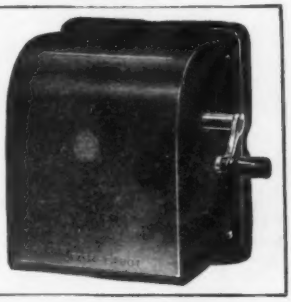

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FOR
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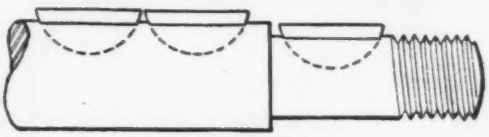

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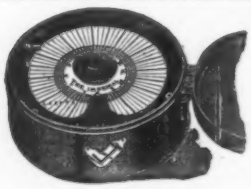

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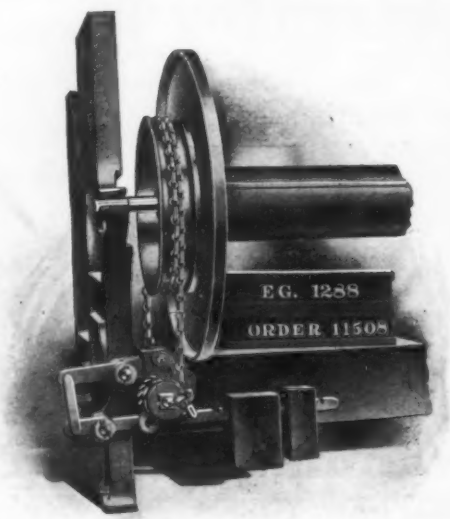

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"JOHN'S MEAT."

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"AND he did eat locusts and wild honey."—It is somewhat startling to know that the locusts which sustained John the Baptist in his long sojourn in the wilderness of Judea are used extensively today in the finishing of textiles.

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John's locusts were the fruit of the carob, or locust, tree (Ceretonia siliqua), which grows plentifully in Mediterranean countries, and especially in Arabia. The long locust pods were John's meat, but it is only the kernel of the bean that is used in the finishing of textiles.

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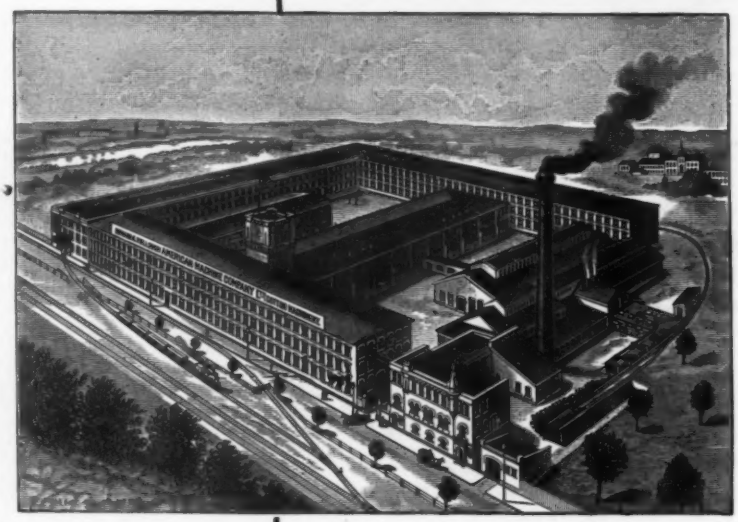

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The Textile World and Textile Record.

VOL. 36 (NEW SERIES.) October, 1908 No. 1

Monthly Comment.

Business is Better.

The above remark has been heard with greater frequency during the past few weeks in textile mill circles than for a long time hitherto. It has the ring of sincerity about it and it is backed up by the cheering evidence of more mills starting up on full time, more orders for machinery, and a general tone of increased confidence. The election is expected by most manufacturers and business men to result in Republican success and to emphatically mark the turn in the tide.

Reports from cotton manufacturers are more encouraging; in the South where during the summer the depression was most keenly felt, there is a decided change for the better. Some lines of woolen industry are experiencing excellent business. This is particularly true in the worsted section. Among the knitters certain branches have been very much effected by the working of the German agreement which has permitted large importations of German knit goods. Other branches of this industry are having good trade and many orders are received with instructions to hasten deliveries as much as possible. The sweater and fancy knit goods branch is particularly active. The autumn months are certainly bringing promise of an early return to normal and prosperous conditions in the textile industries.

The Lancashire Lock-Out.

After weeks of negotiation 40,000,000 spindles and 120,000 operatives in the cotton mills of Lancashire, England, stopped work on Sept. 19th because the Carders' Union would not accept a reduction of 5 per cent. in wages to take effect from January 1, 1909. The spinners voted to accept the reduction, or rather only 76 per cent. of their union membership voted against accepting it, and in cases of this kind 80 per cent. of the vote is needed for rejection.

The unions proposed as an alternative that the mills shut down for a month, believing that further curtailment of production would bring about an increase in the price of yarn and thus avoid the necessity of a reduction in wages. The Employers' Federation was firm in its determination that a reduction should be made, believing that as several general advances in wages have been made during the past three years, it is necessary that wages should be reduced if prices are to be made attractive to buyers, and also taking the ground that the operatives should share in the general curtailment and reduction in other lines and with most other commodities. The operatives then asked that the consideration of a reduction to take place Jan. 1st might be postponed to nearer that date, but the employers were firm and as no agree-

ment was reached on the time limit of Sept. 19th, the mills in the Federation did not start up on the following Monday. A number of other mills not in the Federation also closed.

The operatives' unions are well supplied with funds and the lock-out is viewed philosophically by many of those not directly pinched by privation as being perhaps not an unmitigated evil. The British cotton spinning trade is doubtless suffering somewhat from over production. There has been great expansion in the past few years and the general curtailment of production is thought by many to be a good thing.

The Carders' Union is expected to take another vote shortly. Sooner or later both sides must come together. Meantime the effect of this great curtailment, if for long, will be felt in the markets of the world, both in the price of cotton and for cotton yarns.

Each one of these great industrial conflicts brings so much nearer the peaceful solution of labor troubles. The thoughts and earnest desire of many men are then concentrated on arriving on some practical means of agreement. In this country the Fall River Sliding Scale has proved a great step forward and this present lock-out may be the means of arriving at some better plans in Lancashire.

A Joint Convention of the Two Cotton Manufacturers' Associations and Machinery Exhibition for Boston in 1909.

The vote taken by the Textile World Record in September showed very clearly that the sentiment of the rank and file of the two associations of cotton manufacturers was strongly in favor of one association rather than two, the replies being in the proportion of about five to one for consolidation.

Some of those who were opposed to consolidation favored some sort of closer union or harmonious working arrangement. Many suggested that if each association preserved its identity, there should be one joint meeting during the year, and this without increasing the total number of meetings now held by the two associations, viz: three in all.

"The way to resume is to resume" and the Textile World Record suggests that the way to hold a joint meeting is to hold it, and a particularly appropriate time for holding it would be next spring, and in Boston.

The National Association of Cotton Manufacturers always holds its spring meeting in Boston, and this year the Textile Exhibitors' Association, which was formed after the very successful exhibition in Philadelphia in May, 1907, is planning to hold another exhibition in Boston during the sessions of the spring meetings of the National.

The Executive Committee of the American Cotton Manufacturers' Association has announced that its annual meeting will be held this year in New York, during the month of May. Probably no definite plans have yet been consummated which would prevent a change in the place of meeting from New York to Boston. If its meeting could be held in Boston, the joint Convention and Exhibition would be of the greatest possible interest, and attract the largest gathering of cotton manufacturers in the history of the trade. The Mechanics' Exhibition building is perfectly adapted for the Convention as the business sessions could be held in one of the assembly halls and the exhibition in the great machinery hall under the same roof. There is no doubt but what part of the expense could be defrayed by opening the exhibition to the public, and charging an admission fee, if it should be thought best. Cotton manufacturing plays such an important part in the industrial life of New England that an exhibition of this character would attract widespread attention. One has only to call to mind the interested crowds which always surround the operating exhibits of a textile nature at the Mechanics' Exhibitions to appreciate the interest which the public would take in an affair of this kind.

Boston in May is an ideal convention city, and there are many attractions for the visitors after the hours of the convention.

The combination of the two associations has been threshed out pretty thoroughly on paper, and a meeting of both at the same time and place, whether as a joint Convention or each association holding its own

sessions, would meet the views expressed by a great majority of the members of both associations, whether they were in favor of consolidation or not, and afford an excellent opportunity of determining the desirability of further action.

Founders' Week.

Founders' Week, celebrated in Philadelphia, October 4-10, is of more than ordinary interest to the textile world on account of the inseparable relation of the city to the beginning, development, and present condition of American textile industries. Primarily the celebration marks the completion of 225 years of life as an organized community and famous political events which have occurred within her limits, but the birthplace of the Bill of Rights and the Constitution first saw the birth of cotton, wool and linen cloth and hosiery industries and the Declaration of Independence was antedated by the growth of these industries to proportions which enabled them to supply the army of Washington with clothing.

Many of the men engaged in this early work on which the present industrial greatness of the city is built are famous as friends of Washington and also for the part they took in the war for independence. Among these are Dr. Benj. Rush, who presided in 1775 over the meeting in which the United Company of Philadelphia for Promoting American Manufactures was organized; Christopher Marshall and Samuel Wetherall, Jr. Before the Revolutionary War the growth of the manufacture of textiles was retarded by the attitude of Great Britain to manufacturing in her colonies. Between 1775 and 1812, however, the industry had grown in both extent and production, taking advantage of the improvements brought out between those years, until, at the time of the War of 1812 it is stated 100s cotton yarn was spun, the printing of fabrics by wooden blocks had commenced, and one factory employed about 300 hands and operated 3,200 spindles. It might be said that the city has developed with the invention of perfected appliances in textile manufacturing. The place of Philadelphia at present in textile industries can only be described in the superlative degree. There are 155 cotton mills, 265 woolen and worsted mills, 350 silk mills, and 433 knitting mills within her limits, and a large portion of her inhabitants are dependent upon these industries.

Buying Wool by Sealed Bids.

The Eastern wool buyers, who spent the late spring and summer months in the wool growing states and territories of the West, report a more reasonable frame of mind among the growers in regard to prices than had been expected. The growers keep in touch with general trade conditions in all branches of the textile trade, through the medium of their trade journals, and apparently appreciate, more than the cotton growers do, that artificial means of sustaining prices are seldom successful in the long run. The competition of the buyers may be depended upon to give any reasonable support to values which the situation warrants.

This year, the sealed bid plan made some progress in certain sections of the wool districts, particularly in Montana. Hitherto, it has been the custom for the Eastern wool buyers to visit the different growers, inspect their clips, talk over the situation, discuss the affairs of the nation in general, and prices of wool in particular, and after a few days of conference and bargaining the buyer would make his individual trade with the grower on a mutually agreeable basis.

During the past few years, a number of new buyers have appeared on the scene; young men, more or less impatient with the old methods, and who have not the acquaintance from many years' business dealings with the growers. The sealed bid method of buying puts all buyers on the same plane, and eliminates all personality from the transactions. To be sure, it is necessary for the buyers to form an estimate of the value of a clip, and what they can afford to pay for it. Some of the lazy ones avoid even this trouble by forming their estimates on the average judgment of the others, and adding a sixteenth or an eighth to their bid, hoping to get the lot.

The plan provides that after the inspec-

tion of the wool by the different buyers who come into the pool, the sealed envelopes of the different buyers shall be opened at a certain time on a certain day and the highest bid takes the lot. The buyers furthermore agree among themselves, that if the grower declines to sell his wool to the highest bidder, no one of them will buy the wool from him at any higher price. This practically gives the grower no option but to accept the bid.

This year, the sealed bid method resulted in the buyers raising prices against themselves, and enabling the grower to obtain a higher price than he would have been willing to accept in a trading market. Some of the representatives of large eastern houses declined to go into the pool, and bought their wool under the old system, and in most cases at lower levels.

If the sealed bid method of buying becomes generally prevalent among wool districts in the West, it is likely to influence the system of marketing wool.

Publicity for Libraries.

The action of daily papers in several cities in publishing lists of technical and historical books on textile subjects on file in the public libraries is commendable. But it does not go far enough. There are cases of textile workers using the libraries year after year who would never suppose books bearing on their trades were kept. Prefacing the published lists mentioned above it was stated that little use was made of the resources of the library bearing on textile manufacturing. So far as our observation has extended, in library administration no special effort is made generally to feature certain classes of books. But surely it is worth while to give greater prominence to useful books than to current fiction. The Textile World Record suggests that trustees and other officials of libraries emphasize the publicity side of their work, bringing useful books to the attention of the people they serve by posting lists in suitable places, furnishing them to the trade unions, by the use of newspapers, and other means which will suggest themselves. The qualities of ambition, energy and self-sacrifice which make men seek knowledge in the evening classes of the textile schools need only to find this opportunity to use it.

Khaki for Officers' Wear.

We have received from England a sample of khaki cloth such as is used for uniforms for the officers in the British army. Our analysis of this fabric gives the following results:

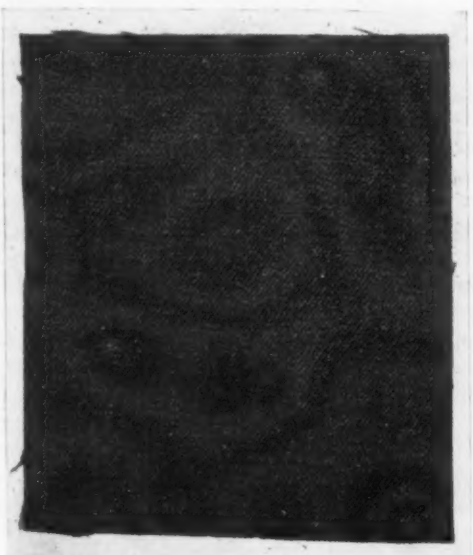
Weight, 5.2 ozs. per yd., 28 in.
Warp, 128 ends olive khaki twist, per in. 2/56s.
Filling, 87 picks single khaki, 1/17s.
Weave, 4-leaf twill, 2 up and 2 down.
[The sizes are for the yarn as it lies in the cloth without allowance for take-up.]

The olive and khaki twist warp gives the cloth an olive cast which is much more attractive than the solid khaki shade of the cloth used for the rank and file. The close set and fine yarn woven with a straight 4-leaf twill gives a very fine fabric, which feels much heavier than it is. Although an ounce lighter than the lightest of the four samples illustrated in our August issue, this cloth feels as heavy as the heaviest (8 ounces per yard) of those four, which was nearly 3 ounces heavier than this one.

The texture of this cloth is shown in the illustration. The cloth itself can be seen at our Boston office. This fabric is necessarily dyed before weaving, probably in the yarn, because the two colors in the warp preclude the idea of its having been piece dyed. Dyeing in the yarn makes it possible for the dyer to secure a better penetration by the dye and consequently a much faster color than by coloring in the piece. The British piece dyed goods illustrated in August were dyed in the piece, but they were much more loosely set, enabling the dye to penetrate the goods more easily.

The fact that the closely set cloth is yarn dyed, while the piece dyed goods are loosely woven, shows that the English manufacturer adapts his fabric and method of dyeing to each other in order to obtain the best color. This may carry an important lesson for the United States Govern-

ment. Taking into consideration the additional weight of three ounces per yard, the American khaki illustrated in our August issue would in all probability resist the dye liquor as effectually as would the British cloth for officers' wear, which, although lighter, is more closely woven. And yet the American cloth is dyed in the piece, while the British goods are colored in the yarn. In other words, the conditions enforced by the United States War Department have presented a much more difficult problem to American dyers than English dyers have attempted to solve. All this may add one more to the already innumerable list of illustrations that the best results in textile manufacturing are obtained not by the knowledge and skill in one department, but by a careful adjustment of conditions in all departments.



SAMPLE OF KHAKI USED FOR OFFICERS' UNIFORMS.

The exports of raw silk from India during the fiscal year ending March 31, 1908, amounted to 1,943,126 pounds, valued at $2,126,009, of which 29,072 pounds valued at $87,890 went to the United States; 1,297,245 pounds, valued at $1,338,397, to France, and 480,460 pounds, valued at $633,598, to the United Kingdom.

American Owners of British Patents.

The following item from the Manchester Guardian emphasizes what we have published at frequent intervals during the past two years regarding the necessity of incorporating a compulsory working clause in the patent law of the United States. Such a provision has built up the industries of Germany at the expense of Great Britain and the United States during the past forty years, and such a provision in the British law is making heavy inroads on American industries:

We are informed that Mr. Marshall Stevens, the managing director of the Trafford Park Estates, Limited, accompanied by Mr. Harold Heathcote, of Messrs. Charles Heathcote & Sons, architects, is proceeding to New York and to Chicago in order to "follow up"—if we may use a phrase familiar in Manchester business—an explanatory advertisement which has been despatched in all to over seven thousand foreign holders of English patents. Mr. Stevens's object is of course to point out the advantages of proximity to the Manchester Ship Canal for works of various kinds which may have to be erected in this country in consequence of the Patents Act. Mr. Stevens and Mr. Heathcote will hold "receptions" at New York and Chicago, and will give information to all who need it regarding sites, traffic facilities, cost of construction of buildings, etc. Perhaps it is not yet very widely known here that even those who have no direct interest in a patent may send notice to the Patent Office calling for its revocation if it affects them.

A Hint from England.

Manchester, July 27, 1908.

Editor Textile World Record:

I am deeply interested in your article on "Europe and the American Cotton Supply." The emigration of Europe's surplus population to the cotton growing states is a new idea to me. I am quite sure that the average European contemplating emigration would as soon think of going to Iceland to grow Iceland moss as of going to the Southern States to grow cotton. And they will not think of it until the net of advertisement is cast around them from the cotton states, as it has been from the wheat growing and cattle producing countries. X.... X....

The total annual crop of cotton from Egyptian plantations amounts to 850,000 to 875,000 bales.

Trade Schools in New York State.

The following circular letter to Boards of Education and school superintendents throughout New York State outlines the plan for providing that State with facilities for technical education:

"Albany, N. Y., Sept. 10, 1908.

"Announcement is made that through the organization of a new Division of Trades Schools the Education Department is prepared to take up the organization of factory and trades schools with local school authorities, commercial or labor organizations, or any other citizens who may be interested. All correspondence upon this subject should be addressed to Mr. Arthur D. Dean, Chief of Division of Trades Schools, Education Department, Albany, N. Y. Where the circumstances justify it, Mr. Dean will journey to different parts of the State for conference with boards of education, and for the presentation of the theme at meetings of organizations and citizens; but, obviously, this ought not to be asked until local discussion has already awakened interest and the attendance of a representative of the State department is likely to have some concrete result.

"If you have not already received printed matter, showing in a general way the thought and plans of the Department in this important educational movement, Mr. Dean will forward the same upon application.

"To avoid confusion and unnecessary correspondence perhaps it may be well to say:

"1. The point of this movement is the training of workmen in craftsmanship.

"2. It looks to the organization of two classes of schools; (a) factory schools, which train for work in factories where there are many employes who work with much machinery; and (b) trades schools, which train for the constructive trades, in which the work is essentially individual, and independent of machines.

"3. The new schools are to be a part of the school system, be subject to its management and articulate with its other parts, but their work is not to be mingled and confused with the work of other schools. They are to occupy rooms, have courses of work, and teachers of their own.

"4. The State will make an allotment of $500 to the board of education for each of said schools, with not less than 25 pupils, maintained for a minimum period of 40 weeks in one school year, and an additional $200 for each teacher, after the first, employed in such school for the same period; but only when the requirements of the Education Department as to rooms, equipment, and qualifications of teachers are complied with. For the present year the Department will consider applications for an equitable allowance of a part of the State quota for a less term than 40 weeks.

"5. It should be clearly known that manual training schools or classes cannot be accepted for a factory or trades school allotment; that no teacher can be approved who is not a proved mechanic; and that no recognition can be accorded to a factory or trades school which does not amply provide for the substantial instruction of pupils in general mechanics or in a particular trade, and which does not attract the regular attendance of a number to justify the expenditure.

"6. It is advised that the system be organized upon an economical footing. Often an idle building, erected for a factory or some other purpose, may be used. These schools should be organized not merely to make a show of doing something, but in response to a real demand, and the system must be flexible enough to meet every substantial demand which comes within the scope of the general purpose for which the State is recognizing such schools. It is suggested that boards of education advise with local commercial and labor organizations, and invite expressions from the press and from citizens; and that where a real demand appears for training in general shop work, or in any particular trade, steps be taken to meet it. When this time comes at any point in the State, the Chief of the Division of Trades Schools will be glad to be of such service as he may.

"7. Just now it is not deemed best to prescribe hard and fast general rules to which all must conform. That will doubtless be done a little later. In the time being we must not lose sight of the vital points which

will insure the training of workmen upon a basis to which no fair objection can be made. To this end the Chief of the Division of Trades Schools will for the present be glad to confer with interested parties and consider individual cases.

"All correspondence will be welcomed by Mr. Dean. It is the very earnest desire of the Education Department to meet a serious and widespread public need, and to do it safely and efficiently. It must be done upon a plan which will be reasonably free from abuse, and which will establish mutually helpful relations between the educational and industrial activities of the State. And we may as well all remember that we are breaking out new roads which seem imperative to the public need, and that we must have patience while we find the true and safe paths.

"Very sincerely yours,

"A. S. Draper,

"Commissioner of Education."

Asking Foreign Manufacturers to Help Revise the Dingley Tariff.

Our English correspondent refers briefly in this issue to an inquiry that is being made by American consuls into industrial conditions abroad with the object of securing information regarding cost of production to aid Congress in revising the tariff next spring. Upon receipt of our correspondent's letter and English papers containing similar items we sent the following to the Secretary of State:

Boston, Mass., Sept. 12, 1908.

Hon. Elihu Root, Secretary of State, Washington, D. C.

Dear Sir: I learn from the English newspapers that the American consuls in England are sending to British manufacturers a list of questions regarding cost of production, which they ask to have answered by the British manufacturers for the purpose of helping the House Ways and Means Committee to revise the American tariff next spring.

I would consider it a favor if you would send me a copy of the questions which our consuls have been authorized to submit to foreign manufacturers and which I take it have been approved by your Department.

Yours very truly,

Sam'l S. Dale,
Editor.

To this we received the following reply:

Department of State, Washington,
September 16, 1908.

Mr. Samuel S. Dale, Editor Textile World Record.

Sir: The Department is in receipt of your letter of the 12th instant, requesting a copy of the questions sent by the Department to American consular officers, with a view to procuring information for the use of the Committee on Ways and Means of the House of Representatives in its work preparatory to the revision of the United States tariff.

In reply, I have to inform you that the questions to which you refer are not for publication and the Department regrets that it must decline to comply with your request. They will probably be made public in due time by the Committee of Congress at whose instance they were issued.

I am, sir,

Your obedient servant,

Alvey A. Adee,
Acting Sec'y.

When this letter was received we knew that the information the Acting Secretary of State refused to give to us for the American public had already been published in England where it had been the subject of general comment. Under these conditions there could be no good reason why it should not be made known in the United States. Accordingly we cabled to our English correspondent asking him to send us a copy of the State Department's questions, and here they are with the letter from the consul at Birmingham to the manufacturers and exporters in his district:

Birmingham, Eng., Aug. 25, 1908.

Dear Sir: I am instructed to make a report on industrial conditions in this consular district, covering cost of labor and conditions, cost of production, prices and exports to the United States, for the use of the Committee of Ways and Means of the United States House of Representatives. The enquiries made of me are most comprehensive in character, and indicate a determination to obtain the most exact information possible as a basis for the complete revision of the existing tariff law. This revision will, in all probability, be in the direction of a reduction of duties, but, of course, that is all in a tentative condition.

To obtain this information I must apply to manufacturers engaged in the many industries of

this district, and I am anxious for your assistance. I would say the more exact and complete the information I can furnish the better will my Government be prepared to act. If, as it appears, the general tendency of the revision is to be in a downward direction, such a revision should increase exports from the United Kingdom to the United States, and you will see, therefore, that it is in the interests of this district, as it is of my own Government, that the fullest information be furnished me.

In these circumstances I must ask questions in regard to your business which ordinarily the business man regards as business secrets. The information furnished, I am informed by my government, will be treated in confidence; that is, none of it will be so used as to indicate the source whence it came.

I enclose a copy of a schedule that I request you to fill up and return to me at your early convenience. You will observe that by figure 3 is the statement "Name of establishment." This information is desired so that if any further enquiries be necessary it may be possible to enquire through me. Appreciating that while you may be willing to give the information desired you may think it important that your name should not be included in my report, I shall if you so desire, refrain from furnishing your name to my Government, and shall substitute therefor a number by which I can identify you and be prepared to answer any further enquiries that may be made of me.

I am hopeful of obtaining this information, and feel sure that as an exporter, you will be glad to furnish me with it. I shall be very pleased, in fact would prefer, to discuss this question personally with you, in order to the more fully explain what I seek.

Yours respectfully,
Albert Halstead,
American Consul.

The schedule of questions is as follows:

1. Country: England.
2. Locality: Birmingham.
3. Name of establishment.
4. Article produced.
5. Quantity of article for which cost is shown.
6. Complete description of article.
7. Year and length of period on which cost is based.
8. Items of cost for quantity named in question 5:
   (a) Cost of labor.
   (b) Cost of materials.
   (c) Officials and clerks.
   (d) Fuel or water power (specify which).
   (e) Supplies and repairs.
   (f) Taxes.
   (g) Total actual cost A to F.
   (h) Interest on investment (per cent.).
   (i) Depreciation (per cent.).
   (j) Insurance.
   (k) Grand total of cost (G to J).
9. Description of material used and extent to which manufactured when received at this establishment.
10. Actual working days in period named in question 7.
11. Total expenditure for labor in period:
    Males 16 and over.
    Females 16 and over.
    Children under 16.
    Total.
12. Average number of persons employed during period:
    Males 16 and over.
    Females 16 and over.
    Children 16 and over.
    Total.
13. Hours of labor per day in this establishment.
14. Days worked per week in this establishment.
15. Hours of labor per week in this establishment.

From the "Post" of Birmingham we learn that this letter from the American consul caused "much astonishment" in that city, following being typical extracts from the "Post's" interviews with Birmingham manufacturers and the consul:

Much astonishment has been caused in Birmingham by the enquiries sent out from the United States Consulate with reference to industrial conditions prevailing in this district. The consul explained that the publication of his letter was surprising to him, as it was not written for publication.

There have been indications, he confessed, that some Birmingham manufacturers look upon the enquiries with suspicion, and one or two, he was told, had said they were for the purpose of indirectly (which would seem to him dishonorably) obtaining facts that could be used by American manufacturers to the disadvantage of British manufacturers in the same line. Birmingham manufacturers who declined to comply with the request would stand in their own light and interfere with the readjustment of the tariff, which, judging from public sentiment in the United States as shown by the newspapers, would be in the line of a general reduction.

Mr. Halstead's opinions are based on the fact that both great political parties of the United States are pledged to tariff revision by the platform on which their Presidential candidates are now presented to the country. He pointed out that the Republican candidate, Judge Taft, according to newspaper accounts, has pledged himself to summon a special session of Congress immediately after March 4, when he would be inaugurated, if elected. His opponent Mr. Bryan, standing on a platform of tariff revision, would probably do the same thing. For several years there have been manifestations of public sentiment favorable to the reduction of the tariff, and of the belief that industrial and economic conditions have so changed since the enactment of the law of 1897 that a readjustment of the tariff schedules involving a reduction of duties is desirable. For example, the National Association of Manufacturers of the United States at a recent meeting resolved in favor of a lower tariff.

Birmingham manufacturers whom we have interviewed express amazement that they should be invited to supply information which their own Government would not ask for, and which chambers of commerce in this country cannot obtain. In most cases there is a distinct fear that the particulars sought would be utilized to the detriment

of British trade, despite any measures taken by the United States Government to have the information treated as confidential. It is pointed out that English firms would much like to know all about the cost of manufacturing goods in America, but they would not dream of asking the Government to obtain the information for them, and if they did it is unlikely that the Government would be able to secure it through Consular enquiries.

A member of a leading firm of manufacturers in Birmingham whose opinion was sought ridiculed the idea that business houses would be likely to supply the information requested. "It seems to me absurd," he said, "to expect English manufacturers to give away their trade secrets. There is no guarantee that the information would not be used against them. The information given by British manufacturers might be obtained by their American rivals in all sorts of ways, and therefore this idea of inviting us to disclose our trade secrets cannot be carried out." Similar views were expressed by other firms. As a general rule, however, chief emphasis was laid on the fact that the information as to costs is one of the business details the secrecy of which, invariably, is most jealously guarded, even from intimate friends.

The "Post" commented on the affair in an editorial that indicated plainly kindly feeling toward the United States and the great self-restraint that the writer was exercising in expressing his own and the general indignation regarding this impudent inquiry:

It is desirable at the outset to exclude any suspicion of personal reflection upon the Consul himself. Mr. Halstead is merely carrying out instructions with the loyalty which would be expected of any Consular officer, whether American or British. Whatever mistake has been made is attributable solely and entirely to the Department of State at Washington from which he has received instructions; and, after a reasonable interval of careful consideration, our first impression remains—that there has been a grave mistake. There will be every sympathy with the desire to amend the United States tariff, at any rate in the direction of lower duties. Every manufacturer interested in the export trade would gladly do anything reasonable to facilitate such a change, but in this matter the officials of the responsible Department have made the mistake of asking too much.

The outcome is a series of questions such as our own Parliament firmly refused to allow the newly-created British Census of Production to put to manufacturers. Only the technical expert can say how far the questions asked are necessary to the framing of an efficient tariff, but many of them appear to be concerned with non-essentials. What use, for instance, can there be in a statement of the actual number of working days in the year covered by the return, the hours worked per day and per week, the days worked per week, or the number of persons employed? Do the American Department desire not only to find out what it costs us to produce, but to demonstrate statistically that we are an overworked, sweated people?

The questions essential to the purpose of the Ways and Means Committee are open to just as severe criticism. Apart from any consideration as to whether the bounds have been overstepped in undertaking such an enquiry, it is difficult to believe that such detailed information is indispensable, or, if it is, whether it is wise to give it. The latter point, of course, is one that business men must settle for themselves. We are only concerned with the general principle, and it is impossible to avoid the conclusion that the enquiry is very ill-advised in methods, if in no other aspect. It would be a great advance on the experience of the past if the United States legislators really took British manufacturers into their confidence and obtained their assistance in framing a new tariff, and no doubt the response would be a very ready one; but so far the methods adopted have savored too much of an invitation to the hen to assist in her own trussing.

THE PLAN OF REVISION.

What a childlike trust in human nature, and foreign human nature at that, is here exhibited by the State Department at Washington. And what a simple plan is being gradually evolved for the revision of the American tariff. First comes the proclamation, The duties must equal the difference between the cost of production at home and abroad, together with a reasonable profit to American industries. Having thus formed what appears to be a very definite idea of the principle that should apply, our statesmen proceed to apply it.

How?

Why, under the new dispensation nothing is easier. Find out what the foreign cost of production is by asking foreign manufacturers to tell us, carefully withholding the details of the inquiry from the American public after the manner in which the German agreement was so expeditiously arranged. Then get American manufacturers to disclose the American cost of production. All that remains is a simple sum in subtraction and then the addition of a reasonable profit. This plan of tariff revision has been before the public for several months, as indeed have a large number of other plans for governing the United States. It is unnecessary as well as impossible to consider seriously all the policies formulated by office-seekers. The greater number of them are left to die a natural death on election day or before. When, however, a Department of the Government, as in the case of this tariff revision scheme, sets the Government machinery in motion to carry out

one of these policies, it is time to give it careful consideration.

THE DIFFICULTY.

The insurmountable difficulty of determining foreign and domestic costs by asking questions of manufacturers arises from the fact that the manufacturers, the only persons who can give it, will not give the required information and cannot be made to do so. Any one with ordinary familiarity with business methods should be aware of this fact, which has been demonstrated so effectually at Birmingham. And this is the right position for the manufacturers to take. For a manufacturer to reveal the cost of production in his mill is to expose the innermost recesses of his business to his actual and potential competitors. No sensible man would do that. No man who is managing an enterprise owned either wholly or in part by others has any right to do it. The duty he owes to his stockholders forbids it. To ask a manufacturer for such information is too ridiculous to be an affront. Manufacturers realize fully the necessity for guarding the details of cost of production. Many of them are so unreasonable as to refuse to give information regarding wages paid for operating and the production of a particular machine, details that are necessarily well known to their operatives, and which have but a remote bearing on the total cost of production.

ASKING FOREIGNERS TO HELP US.

Absurd as is the proposition to determine cost of production by asking domestic manufacturers to supply the information, it becomes even more absurd when applied to foreign producers. "What is there in it for us?" is the natural query from them. And the reply must be: "Nothing." They are asked to disclose the details of their business in order that a foreign country (the United States) may know how high to raise the American tariff in order to shut out their goods. Suppose that the British Government should instruct its consuls in the United States to request American manufacturers to answer such a list of questions regarding American methods and cost of manufacturing. What a howl would be raised from Eastport to San Francisco.

IMMEASURABLE FOLLY.

It is unnecessary to dwell on the other features of this quixotic scheme, of the vast extent of the proposed inquiry. The information from England would be but a beginning. The inquiry would have to include all countries and all products competing with our own, for our tariff must apply to all alike, and the lowest labor cost, whether in England, India, China, Japan or elsewhere, would determine the American protective duty. And this information covering all the details of manufacture for all the products of human activity must be obtained and classified in little more than six months. For are we not told that this work of revision is to begin immediately following the inauguration of the next President? But it is useless to explore the folly of this tariff program. It is enough to stop with this fact: Neither the domestic nor the foreign manufacturer will reveal the cost, and in most cases he has not even the right to do so.

AN ALLURING PROPOSITION.

Despite its utter impracticability this scheme of adjusting the tariff schedules to cover the difference between the domestic and foreign cost, plus a reasonable profit, has won the approval of a large part of the American people. It is outwardly so reasonable. It has been proclaimed with such an air of authority, as if it were a verdict of history. And it is such a convenience for those who must have an opinion of the tariff and cannot form their own, combining, as it does, such an array of glittering generalities into one shining orb of apparently eternal truth.

THE TRUE PRINCIPLE OF PROTECTION.

Nevertheless it is better to be right than to be fooled even by such a plausible proposition. And for those of us who happily have no occasion to mould our opinions of the tariff to meet the exigencies of office-seeking, the abandonment of this bewitching formula need cause no regret. The revision of the American tariff is too important to

take any chances with it. If a majority of the people want to abandon protection, it is right that that policy should be abandoned until the people change their minds again. If, however, the majority desire, as we believe they do, to maintain the policy of effective protection to American industry, then the essential thing is to stick to the principle of such protection without a shadow of turning. A protective duty should be imposed on all articles for the production of which the resources of this country are adapted. And that duty should in every case be high enough to assure the possession of the American market to the American industry at prices that will make it possible for all employed in that industry to obtain the American rate of wages.

APPLYING THE PRINCIPLE.

The revision of a tariff on this principle requires care, good judgment and a great deal of labor, as would naturally be the case in a matter affecting the welfare of so many people. There are, however, conditions under which the general direction of the revision admits of no argument. If, for example, a commodity for the production of which the resources of the country are adapted, is being imported in considerable quantities while a large number of operatives trained in that trade are unable to obtain employment, the necessity for an increase of the duty becomes evident at once. We refer particularly to such conditions because we believe they prevail in the textile industry at the present time. That a large number of textile operatives are out of employment in the United States is well known. The heavy imports of textile goods are equally well known, the figures for the year ending June, 1908, being as follows:

Textile Imports.

Cotton manufactures	$68,379,781
Fiber manufactures	54,467,572
Silk manufactures	32,717,668
Wool manufactures	19,387,978
Total foreign value	$174,952,999
Estimated duty	87,476,500
Domestic value	$262,429,499

The amount of increase in tariff rates and the particular commodities to be affected could be determined only by a careful investigation, but the broad facts of unemployment and of imports that are here revealed lead straight to the conclusion that the duties on textiles should be generally increased in order to put our idle operatives to work in the production of textile goods now brought from foreign countries.

INADEQUATE PROTECTION FOR THE TEXTILE INDUSTRY.

There is another phase of the industrial situation that points plainly to the need of relief for the textile trade. Industries may be divided into two classes: those which can be brought into direct competition with foreign countries because their products are transportable; and those which cannot be brought into direct competition with foreign countries because their products are not transportable. It is one of the objects of a protective tariff to keep conditions uniform in both classes of trades by providing the former with a tariff protection to take the place of the natural protection possessed by the latter. If, then, we find the ratio between American and foreign wages to be greater in a trade of the second class than in one of the first class we may safely conclude that the tariff protection does not equal the natural protection. Take cotton weaving and the mason's trade for examples. According to recent reports by the British Board of Trade and the Massachusetts Bureau of Labor, weekly wages in these two trades in England and Massachusetts are as follows:

	England.	Massachusetts.
Masons	$9.18 (52½h.)	$23.45 (48h.)
Cotton weavers	6.00 (54h.)	8.27 (58h.)

According to these figures a cotton weaver earns 38 per cent. more in Massachusetts than in England, while a mason earns 155 per cent. more in Massachusetts than in England. This variation in international wage ratios may of course be due to a disparity between weavers' and masons' wages in England, as well as in the United States. For reasons we need not discuss here a wage disparity between trades is

less likely to exist in an old country like England than in a comparatively new one like the United States. Assuming then uniformity in England, the variation in the international ratios leads to the conclusion that if workers in the building trades in the United States are not receiving much more than the American rate of wages, workers in the textile trades are certainly receiving much less.

Wages are subject to the law of supply and demand. Arbitrary regulation of wages is possible only so far as that law will allow it. A decrease in the demand for labor or an increase in the supply is sure to lower wages. In the industries whose products are non-transportable, like the building trades, the workers encounter the total demand to supply the needs of all the consumers in the country, while the supply is confined to the workers of the country. A very different situation prevails in the industries, like textile manufacturing, whose products are easily transportable. Here the workers encounter only such demand for labor as arises from domestic manufacturing, while the supply of labor in the form of imported goods includes all the operatives in that trade in the whole world. Only by an arbitrary obstruction of imports can equality of the balance between supply and demand for labor be maintained in these two classes of industries or trades. The present wide discrepancy between wages in the textile and building trades of the United States, the heavy importations of textile goods and the unemployed textile operatives supply strong presumptive evidence that the present obstruction to the imports of textile goods is not sufficient to maintain the country's standard of wages and employment in textile manufacturing; that in common fairness the tariff on textile goods should be increased.

THE PRINCIPLE AND ITS APPLICATION.

Such is the conclusion reached by the application of the true principle of protection in the American way. That principle requires no juggling with words for its expression. It need not be excused. It can be maintained after election as well as before. If it is abandoned by the majority of the people, its supporters, as in 1892, can calmly wait for events to convince where arguments failed. Its application can be made without stirring outside of the United States, and without the advice or consent of the manufacturers of any other nation on earth.

The Classification of Cotton.

An Examination of the Report of the Commissioner of Corporations.

BY S. J. CHAPMAN, M. A., M. COM.

Professor of Political Economy and Dean of the Faculty of Commerce in the University of Manchester, England.

(Continued from September.)

(Specially Written for the Textile World Record.)

Parts II and III of the official report on cotton exchanges will excite less interest than Part I, for the questions with which the former deal are not burning questions and the suggestions offered are in no degree revolutionary.

DIVERSE METHODS OF CLASSIFYING COTTON.

The subject of Part II is the classification of cotton. It is pointed out that the methods of New York and New Orleans differ in fundamental respects. At New Orleans cotton is not classified until it is delivered, and then it is only indirectly classified for what the arbitrators (whose function is similar to that of the classification committee of New York) determine is the "points on or off" to be received or paid as the case may be. The Liverpool system is the same. At New York, however, cotton is classified as it comes in, in anticipation, so to speak, of it being delivered against futures.

For the New York plan it may be forcibly argued that the character of cotton is settled before its destination is known and that consequently no parties can complain that they have been individually discriminated

against. Sinister interests are held in check because when the cotton comes in nobody knows to what uses it will be put.

EACH METHOD SUITS ITS OWN MARKET.

Clearly the New York system could not be applied at New Orleans or Liverpool, for enormous supplies of cotton pass through New Orleans and Liverpool and all these would have to be classified merely with a view to the character of that minute fraction which is delivered against "futures" being determined. The stock at New York, as all know and as I noticed in my last article, is very small and exists mainly—this is its differentiating characteristic—as a deliverable basis for futures. Incidentally we may observe that though small the New York stock is not an accumulation of the refuse of many years, as has been so persistently alleged. The charge that it is has been disproved by the investigations of the Bureau of Corporations. The stock is of course largely "surplus cotton," as defined in my last article, but this is not refuse cotton. And nobody suggests that the New Orleans plan of indirect classification should be tried in New York, for probably all who are acquainted with the circumstances of cotton dealing will agree that this would be to place in the hands of the authorities of the exchange a weapon which could be misused. It might be urged against this argument that —as is indeed the case—little complaint is heard of classification after delivery in New Orleans or Liverpool, but the slight risk of creating solid grounds of complaint at New York is not worth taking when the gain would be nil. Indeed instead of gain there would be loss because at New York the same lot of cotton may be tendered again and again; and again and again, therefore, under the New York plan, these bales would have to be re-classified. At New Orleans and Liverpool the chance of any given bale being tendered twice against futures is the chance of the same pea being drawn twice from a bag containing thousands of peas which are shaken up after each drawing.

ALLEGED OVER-CLASSIFICATION AT NEW YORK.

Persistent over-grading is alleged against New York classification. In connection with this charge it is noteworthy that an under-grading tendency has been as resolutely affirmed of the action of arbitrators at New Orleans. Each tendency, if it exist, is as likely to give way to the other. There appears to be no logical connection between over-grading or under-grading on the one hand and the New York system of classification or the New Orleans system on the other hand. Both charges must be greatly exaggerated. In the sixteen years ending in 1906 the total of the amounts paid at New York in compensation for mistakes made in classification—payments which are provided for by rule—did not reach the insignificant figure of $20,000.

DEMAND FOR CLASSIFICATION OF INDIVIDUAL BALES.

But apart from this complaint all are not mutely acquiescent in the practice of classification at New York. The classification of individual bales in place of the classification of lots (as having so many bales of one kind and so many of another kind) is demanded. The ground for the demand is that even running lots are practically never delivered and that therefore the receiver of the cotton is put to the trouble of finding out for himself what quality each bale contains. If the classification is done thoroughly it ought to be possible to label every bale, and, if every bale has been considered, not to record its mark is to throw labor away. No great difficulty should be experienced in meeting this demand for the classification of individual bales—the additional expense of classification and storing could not be considerable—and incidentally a number of disputes which arise after delivery would be prevented. The only objection I can foresee, which hardly appeals to me as weighty, is that lots might be picked over afterwards and a small gain be made in that way—just as gain can be made by picking over sovereigns when some quantity has to be melted, as Gresham pointed out—since classification could never become quite undeviating.

OBJECTION TO MIXED DELIVERIES.

Another criticism is that the lots actually delivered are frequently so very mixed. It is contended that this renders them worthless

for the spinner and difficult for the dealer to manage. As regards their worth to the spinner for his purposes, I think we need not be disturbed, for the chance is enormously against any even running lot meeting his needs. If a spinner does buy "futures" he must use them merely as a hedge and be prepared to sell them back again. But the case of the dealer is different. In the first place mixed lots are difficult to deal with. And they are accredited with depressing futures, the value of mixed lots being low just because they are mixed; but this objection is of little moment since the depression of futures is, generally speaking, harmless if it is uniform. A more serious allegation is that occasionally sellers deliberately go to the trouble of picking highly mixed lots so as to discourage insistence on deliveries.

The disadvantages of mixed deliveries and of a wide range of choice as regards deliveries, together with proposed remedies, form the subject matter of Part III of the report which is entitled the "Range of Grades Deliverable on Contract."

PROPOSALS AS TO DELIVERABLE GRADES.

The demand for some restriction on the range of deliveries is widespread. Various forms of restriction have been proposed. One is to exclude all grades beneath low middling. This would get rid of "unspinable" cotton. From restriction which could merely rule this out no harm could result. But in certain of their proposals examined in the report before us there are grave demerits. One of these proposals is the "specific" contract. This has been used in two senses. The one that all futures should be based on one grade only, the other that there should be as many kinds of futures as there are grades.

Against the proposal in the first sense the danger of corners and squeezes, and the inconvenience of cotton of the one deliverable kind being held up to back futures when it was scarce, may be urged. Against the proposal in the second sense somewhat the same objections hold together with the additional objection that dealing would be hampered by the further complexity introduced into the market.

Disadvantages similar to those which must attend a system of futures based on one grade of cotton, but less in degree, would be associated with any narrow limitation of deliverable grades. And it is not easy to see what appreciable advantages could accrue from the use of two contracts, one for the delivery of middling cotton and grades above, and the other for the delivery of middling cotton and grades below.

The suggestion that every delivery should be an even running lot, the selection of the quality being at the option of the seller, has more to commend it prima facie; but the report before us expresses doubt as to the practicability of the plan and points out that the buyer would still be in a state of complete uncertainty as to what he was to receive—an uncertainty which in my opinion is not a matter of serious moment and is quite unavoidable if the benefits of "futures" are to be retained.

A more practical suggestion, the commission holds, is that a premium should be paid on even running lots; but the "uncertainty," of which so much complaint is made, would naturally still remain. Of course there is nothing to prevent such premiums from being privately agreed upon as things are. At any rate the seller might inform the buyer of the grade he intended to offer as soon as he knew himself.

VALUE OF UNIFORMITY OF GRADES.

The committee is quite right in pressing the value of uniformity of grades throughout the cotton trade. Such uniformity would greatly facilitate business, especially international business. Diversity of grading is to some extent holding the several cotton markets artificially apart at the present time.

The exports to the United States of embroideries from St. Gall in the month of May were only $524,044, against $1,166,010 in May, 1907, and $532,187 in April, against $1,156,722 in April, 1907.

The imports of cloth, fabrics, knitted goods, hosiery, etc., from Great Britain into Canada in 1907 amounted to $17,000,000, while the United States furnished only $875,000 worth.

Seasonable Fabrics.

DRESS GOODS.

Fine broadcloth continues to be the favorite material in the dress goods market. The steady demand for these goods is due largely to the number of new shades that is being used this season, such as London Smoke, Taupe, Peacock, Edison blue, etc.

FIG. 1.

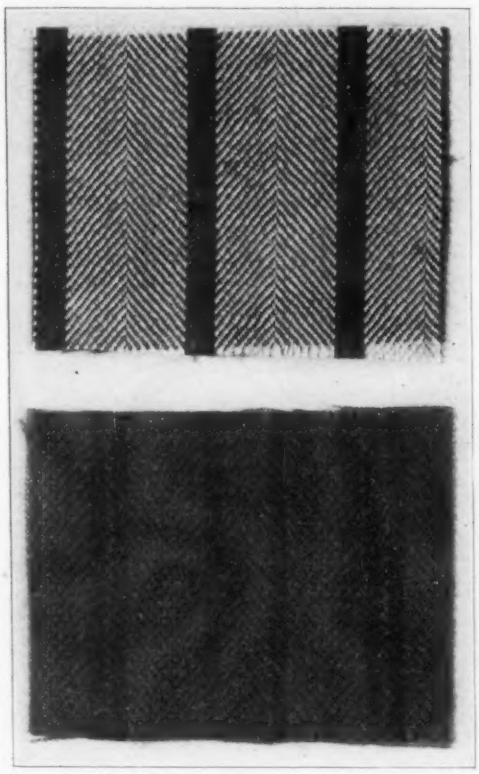


FIG. 2.

The light weight with a high lustered finish has been the best selling quality; low end broadcloths are not selling as well this season; prices have been reduced on some of the numbers, which gives the retailer a chance to handle them to better advantage.

In the fancy dress goods market stripes continue to outsell checks and plaids. Shadow-stripes in the different weaves have been one of the staples in the fancy market. Chevron stripes in the two color effect are very popular.

Fig. 1 shows a 54-inch from F. A. Bochmann & Co. at $1.05 a yard. Fig. 2 shows a neat weave 54 inches wide from B. Priestley & Co. at 85 cents a yard.

Hair-line stripes as shown in Fig. 3, 50 inches wide, from King & Beals at 85 cents a yard has been very popular in all the staple shades.

Black voiles, serges and henriettas are selling very freely, and a steady demand is looked for during the remainder of the season for these fabrics.

Cotton warp dress goods in the fancy chevron and diagonal weaves are selling both in the 36 and 42-inch widths. Fig 4 shows a 42-inch chevron from the Endurance Mills at 37 1/2 cents a yard.

Both the domestic selling agents and the importers have their spring lines open for inspection. These lines consist of some very attractive novelties; piece-dyed both plain and fancy weaves are being shown very strongly. The placing of spring orders has not opened up with as much activity as was hoped for. Most of the buyers are working on conservative lines waiting for future developments.

SILKS.

At the present time better conditions prevail in the silk market than have existed for the past few seasons. This is due largely to the steady demand for all grades of silks and satins, low stocks and the curtailment of productions, which the manufacturers held down during the earlier part of the season.

The demand for satins and satin faced silks has been one of the features of the silk market. Requests are coming so fast for these goods that all stocks are sold out of the desirable shades of blues, smokes, greens and browns; orders are being taken for delivery from one to three weeks. From the present outlook it is very evident that these goods will be favored during the entire season.

The demand for fancy silks continues to be very active; while stripes predominate,

plaids and checks are gaining favor; hair-line stripes in all sizes from one-quarter to one inch are among the leaders. Fig. 5 shows a neat effect 19 inches wide from Givernaud Bros. at 37 1/2 cents a yard. Fig. 6 shows a double hair-line stripe 19 inches from Givernaud Bros. at 37 1/2 cents a yard. Cheverons and herring-bone stripes are being shown in a number of desirable color combinations and weaves. Fig. 7 shows a 20-inch from Pelgram & Meyer at 72 1/2 cents a yard. Satin striped jacquard effects such as is shown at Fig. 8 from Chas. Schoolhouse 20 inches wide at 95 cents a yard continues to be very active.

The demand for plain colored taffetas is very active. Requests are being received for full assortments of both the staple and new colors. Several of the manufacturers say that they will be compelled to advance their prices as they cannot turn out these goods on a profitable basis at the present quotations. Thirty-six inch black taffetas in the lower grades are selling very freely. These goods at today's prices can be handled at good advantage by both the manufacturer and the retailer.

Silk and cotton fabrics are gaining favor with the silk buyer. These fabrics are being made by several silk mills and are sold as low as 19 cents a yard. Japanese Habuatis have been affected very much by the sales on these silk and cotton fabrics.

Bengaline silk is being used both for millinery and trimmings. This silk is being made in a number of cords, ranging from 50 cents to $1.25 a yard.

COTTONS.

Generally speaking the condition of the cotton goods market remains unchanged; the demand for staple brands of 4/4 bleached muslins and wide sheetings continues to be very active; these goods are being offered at the same quotations that have prevailed for the past few months. With the feeling that prices will not change to any extent, the buyers are placing their orders with more freedom than has existed for the past year.

The selling agents of dress ginghams are showing their spring lines. The principal change in these lines is the advance in price of several of the brands from 1/2 to 1 cent a yard. The assortments that have been shown consist of some very attractive designs and colorings. Side-bands, large plaids and all sizes of checks are favored

FIG. 3.

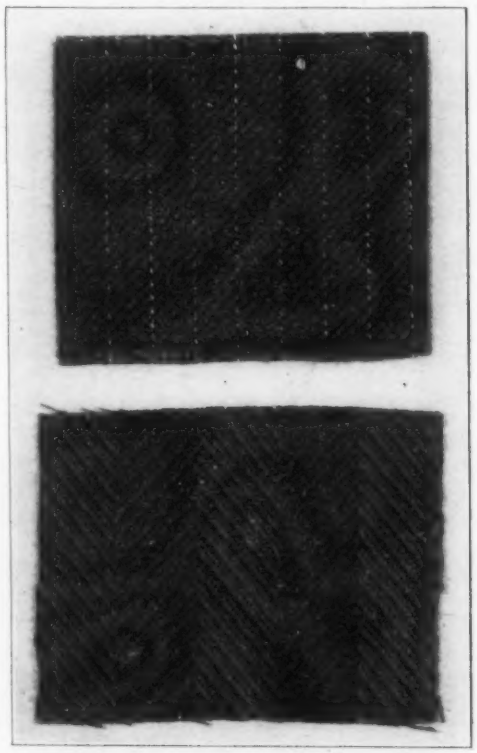
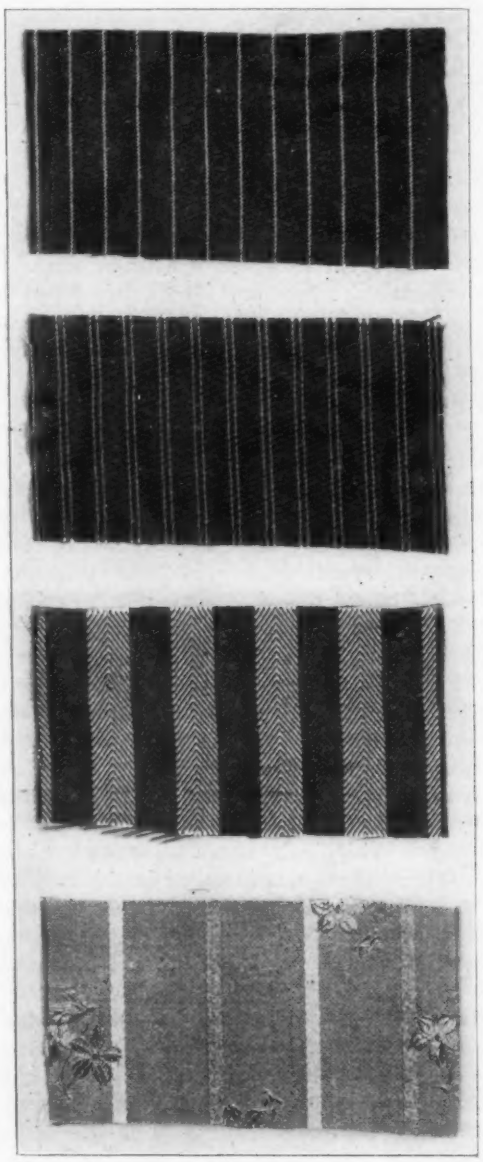


FIG. 4.

very strongly. The booking of spring orders is not as active this season as in former years; most of the trade are only buying half of their actual wants, leaving the balance open so as to be prepared for any new developments that may take place later on in the season. A healthy business is looked for during the entire season on this class of merchandise.

Trade in the white goods market is as brisk as in former seasons; while the converters have booked a great many orders

for spring delivery, these orders are not as large as last season, and in a great many instances buyers are only placing their future



FIGS. 5, 6. 7 AND 8

orders on numbers where deliveries cannot be made otherwise.

Poplins, reps, jacquard effects and heavier weight materials look very strong for next season's white goods trade.

The steady demand for side-bands has been one of the features of the wash goods trade; a number of very attractive designs in printed flannelettes are being shown in the side-band effects. These patterns are outselling the regular staple styles. Side-band percales, prints, galatea cloth and ginghams are selling very freely, and in a great many instances the desirable patterns are scarce.

Considerable activity has existed in the sheeting and pillow case trade during the past month. This is caused largely by the number of buyers who have held off on their regular fall orders thinking that the market would undergo a change.

Converters of cotton linings report improved conditions on their various lines; sateens in the popular shades are very strong.

Re-orders on cotton flannels and cotton blankets are being received much earlier this season than usual.

The principal requirements for the successful cultivation of cotton are a warm and moist atmosphere, a soil containing lime and potash and a climate in which eight months are practically free from frost.

The English yard-pound is the single standard for numbering spun yarn throughout English speaking countries, including the British colonies, China and Japan.

In 1831 the Massachusetts legislature passed an act authorizing the preparation of a manual on silk culture and large orchards of mulberry trees were planted. The production of silk in one year amounted to over $150,000, but in 1839 the silken bubble burst.

In Bavaria, Italy and France it is said that experiments are being made for the production of artificial cotton from the wood of the pine tree after the bark and branch knots have been removed. After it has gone through several preparatory processes it is as flexible as the natural cotton.

The Saratoga Meeting of the National Association of Cotton Manufacturers.

Fine weather and a large attendance combined to make the 85th meeting of this association at Saratoga Springs an unusually enjoyable occasion. The visitors were welcomed by James D. McNulty, Esq., President of Saratoga Springs, at the first session on Tuesday, Sept. 29, his address being as follows:

The President:—Among the interesting features of travel of the observations of the peculiarities of community life and the administration of government, both provincial and national, many of us get so intensely interested in the customs and the costumes in foreign countries that we dislike to be welcomed at our home port by the officials of the United States Customs. (Laughter.) In this respect there have been few changes in many years, but we do find changes in going from one section to another of our own country and from State to State. In New England the cities and towns are paramount in local government; in the South the counties seem to be pre-eminent. We come over into the Empire State and we find here a municipality which is a village and its chief magistrate is a President. I take great pleasure in introducing to you the President of the Village of Saratoga Spring, Mr. James D. McNulty. (Applause.)

Mr. James D. McNulty:—President Plunkett and members of the National Association of Cotton Manufacturers.

Gentlemen:—In glancing over the deeply instructive program of this your eighty-fifth semi-annual meeting, one reads with especial interest the number entitled, "The Place Which the Cotton Manufacturer Fills in the Economy of the Nation." It is such a big place, this of the cotton manufacturer, and of such vast importance, directly or indirectly, to the whole country that we cannot but deem ourselves privileged by your assembling here. With great pleasure, therefore, I greet you in the name of Saratoga Springs and bid you on behalf of our citizens a welcome that is the best which hospitality's loom weaves.

Many of you have doubtless read in the September issue of the Textile World Record an article entitled, "The Marketing of Cotton." To even a layman it is full of interest and brings anew to the mind a realization of the great work that has been done and the great progress still to be made in the handling of cotton. The writer refers to conditions of the past when the cotton farmer, wandering in the wilderness, needed of Moses and found the desired leader in the cotton factory itself.

The numerous and serious problems still confronting manufacturer and farmer—the fat year ruining one and the famine year ruining the other—though a long way from being solved, yet are being so intelligently and fairly studied by those interested that time is bound to bring a solution. Perhaps the equalizing of things by the amalgamating of interests may be brought about.

From the same issue of the Textile World Record I learn that not many miles from here, at what is now known as Greenwich, was built in 1800 the first cotton mill of New York State. It was owned and operated by two Rhode Island Yankees, William Mowry and Job Whipple, by name. Thanks to their enterprise there was installed in this mill, in 1816, a machine known as a double speeder, which was the first of the kind to be operated in America.

That you selected Saratoga for this meeting is a cause of gratification to us. It has for generations been favored, and continues to be favored, as the meeting place for the most representative bodies in America, doubtless because Saratoga is unique in its conditions which are alike conducive to deliberation and to relaxation. Designed by nature as the Nation's, if not the World's great health resort, our citizens have taken steps to preserve its peerless mineral springs and to retain it as a place for rest and recrea-

tion. After our mineral springs and climate, comes the beauty with which Saratoga has been dowered. Travelers agree that nowhere in the world are to be seen such elms as those which shade and adorn the streets of this village. And the views of mountain and valley, which surround us, the Green Mountains to the east, the Catskills on the south and the Adirondacks on the north and west perpetually emphasize how much Mother Nature loved this place which she set apart for man's health and pleasure.

With a program supplying for its business sessions interest and instruction in abundance, and providing admirably for recreation, your brief stay in Saratoga, gentlemen, should be fruitful in results. We trust that it may be so and that while here you will consider the town yours without reservation. We should indeed be glad to learn that you will come to us again either as a body or as individuals, and shall hope for this pleasure. (Applause.)

The President:—One of our members has been very much engaged on the mechanical side of cotton manufacturing. From his youth he has been a most prolific inventor and I believe has taken more patents on textile appliances than perhaps any other American. He has not devoted, however, all his time to mechanics, but has been a profound student of economics and a writer of marked ability. Like the Northrop loom, which he has so thoroughly advertised, his magazine always appears to be full. And I will ask the senior vice-president of this Association, Mr. George Otis Draper, to respond to this cordial welcome. (Applause).

Mr. George Otis Draper:—President McNulty, President Plunkett, Ladies and Gentlemen: In responding to our courteous welcome to Saratoga and remembering the kind remarks of our President, the little reference to inventions brings to mind the fact that Saratoga Springs itself is intimately connected with one of the best appreciated modern inventions, for it was here that the Indians, with nature's assistance, anticipated the highball by mixing the fire-water of the pale face wth the carbonic of these springs. (Laughter.)

President McNulty made one reference that I did not expect at all. I told him to coach me on what he was going to say so that I could be thinking up what I could say. But he referred to William Mowry, who built the first cotton mills in New York State. That has a personal significence to me, because in the next town to the little burg of Hopedale, where I have resided for many years, is an old fashioned country village known as Mendon, and the Mowry family, starting in Mendon, have their annual reunion there; and I happen to be related to the same Mowry family. I do not think I am a descendant, but I am certainly a farway cousin to this William Mowry, and I might also say that our presidential candidate, William H. Taft, is also a connection of the same family. (Applause.)

When one stands in Saratoga and thinks of the past, present and future of this, our meeting place, he is filled with strange and conflicting emotions. The social history of this place has an important part in the councils of our country. We all have heard of the Saratoga trunk which was typical of the fashion ever prevailing. We have read somewhat in past years of the Saratoga races, but I have been advised to touch very gently and very gingerly on the present application of this peculiar feature of men's amusement to the politics of one of our great sovereign states. Saratoga is also noted for its Conventions, and we as cotton manufacturers, in choosing a quiet, peaceful spot for our deliberations, have done well. (Laughter and Applause.)

President Plunkett of the Association then delivered his address:

President's Address.

CHARLES T. PLUNKETT. Adams, Mass.

When the members of The National Association of Cotton Manufacturers meet on these semi-annual occasions, they do so with, at least, two purposes in mind, one of a social, the other of an educational nature, but both of them inspired by the excellence of the program provided by the Secretary and the Board of Government.

Each time that we meet gives an opportunity to note six months of progress in the purpose of this Association, in all that pertains to advancement of the cotton manufacturing industry.

It is no disparagement to the value of addresses recording improvements in materials, processes, or methods of merchandising that an acknowledgment must be made to the worth of these semi-annual reunions in bringing old friends together and the formation of new acquaintances.

That minds are quickened in conferences over perplexing problems is axiomatic as is the parallel iteration that personal relations of mutual advantages are agreeably and ofttimes permanently established.

With its growth, the Association is attracting to its membership, men of the highest types of cotton manufacturers, beyond our boundaries, as well as in this country. In the Secretary's report at the annual meeting, it was stated that its members were connected with establishments which operated 17,000,000 spindles and that with the woolen, knitting and kindred industries similarly represented in this Association employed a capital of $750,000,000.

Would it not be extraordinary if, from such an aggregation of managerial ability and enormous resource, the technical and economic subjects on the programs were not treated by clear thinkers and capable students of the sciences related to our craft.

These meetings and the publication of two volumes of transactions each year, are by no means a full measure of the work of this Association.

It has been the means of assembling together on two occasions, European as well as American cotton manufacturers in conference with the growers of cotton, to discuss the diverse and important questions bearing upon the relations which these two interests hold to each other. The gathering of these two, representatives of raw material and its manufacture, in peaceful convention, was as auspicious as it was unprecedented, though the events are too recent to receive the scrutiny of statistics, yet there is every reason to believe that valuable results will be derived from these conferences as well from those which may follow.

This Association alone of all the manufacturing organizations in the country has appeared at Washington, and at a meeting in the White Mountains, and vigorously advocated measures for stopping the denudation of forests which is impairing the water powers, by allowing extremes of drought and flood in the Atlantic coast states, to an extent which is furnishing one of the most serious economic problems of the day.

The forceful presentation of the utilitarian side of what appeared to have been widely advocated as a scenic proposition unquestionably carried much weight with the committee and with Congress.

Besides these activities so broadly assumed and popularly approved, the committees of the Association and influential members have persistently and with conspicuous ability, represented in the cotton exchanges, both here and in Europe, the vital importance of mutual interests and common welfare.

Attention has frequently been called to the encouragement of excellence in textile education by its student's medals which are awarded to the student of the highest rank in textile schools whose standards comply with certain conditions, so that the student's medals are virtually an award to the textile schools as well as to the recipient.

The Association scholarship in one of the textile schools has been productive of results which justify the wisdom as well as the liberality of the member who placed in the hands of the Association the funds necessary for capitalizing this scholarship.

The Association medal which has been awarded from year to year with such excellent judgment as to furnish incentives, which have doubtless given to the Association the results of investigations which could not be made directly by this organization, and which under other conditions might and probably would have been contributed elsewhere.

For more than a generation after its organization in 1854, this Association, under its earlier names, is believed to have been the only one of its kind in the world.

In time as cotton manufacturers in common with those of other industries appreciated the value of co-operation, other associations of cotton manufacturers have been formed with membership covering a state, county or town, until there are known to be over thirty-six of these organizations of a permanent character, and there are doubtless many minor organizations not included in the above.

These organizations, as far as known, appear to be widely diverse in methods and scope as local conditions may require, but they all emphasize the value of harmonious action upon non-competitive questions.

This Association is constantly in receipt of requests from other bodies, usually commercial organizations, to join with them in measures which are generally of admitted merit, but the Board of Government has always declined to depart from the policy of this organization in keeping strictly to its purpose of being a cotton manufacturer's association.

During the past year the business of cotton manufacturing has suffered from one of those recurrent disturbances in which some unrelated difficulty of commercial affairs has imposed serious results upon all exchanges of money.

This impairment of the purchasing power of everybody, from the least unto the greatest, necessarily diminished the output of the mills, for manufacturing cannot proceed except as there are corresponding markets.

As necessity is the proverbial mother of invention in the individual, so in the affairs of a manufacturing corporation, these unpleasant conditions spur everyone to strenuous efforts in reductions of costs of manufacture, or in the production of goods more attractive to the markets.

It is an undeniable fact that everyone of these financial crises have been followed by improvements in cotton manufacture.

It should be clearly understood that the occurrences during the following periods do not refer to the dates of organization or invention, but quite the contrary, they refer to the extensive commercial use of machines or methods which may have been made a long time earlier, and vainly waited for many years before its general introduction. One well known machine was not generally introduced in cotton mills until some twenty-five years after its full mechanical development; and a valu-

able process in cotton manufacture waited fully fifty years after it was known publicly, and fully described in a patent.

The panic of 1857 was undoubtedly the most intensely paralyzing of any financial disturbance, and for lack of anything comparable to modern methods of transportation, it made more cases of impoverishment and suffering for the necessities of life than has ever occurred since. It is said that this crucial test compelled the installation of epoch making moters—the turbine water wheels and Corliss engines—neither of them entirely new to mill engineers.

After the panic of 1873 came the desperate struggle to avoid waste and to utilize the waste products. Then were evolved the fast spindle and filling frames which seemed to revolutionize the processes in vogue and few solvent manufacturers allowed much time to elapse before availing themselves of these triumphs of inventive genius, forced by the dire conditions of the period. With suffering pride but in full justice it may be asserted that German and Russian manufacturers have preceded and excelled us as users of low grade wastes, and I believe still do.

In 1867 the Harmony Mills imported some Evan Leigh (now Platt) revolving flat cards though it was after the serious depression of 1883, that the American manufacturers widely introduced this type of carding engine as preferable to the fixed flat cards.

The same period developed the slow-burning mill construction which had been a millwright's tradition for thirty years and which has warranted the almost insignificant insurance costs now prevailing and incidentally revealed the feasibility of better light through the day and lessened hours of artificial illumination by means of buttressed walls which permitted larger windows.

CHARLES T. PLUNKETT, PRESIDENT NATIONAL ASSOCIATION OF COTTON MANUFACTURERS.

In 1893 a long period of chronic depression lasting for several years was marked by numerous improvements.

American mills entered the field hitherto held securely by mills across the Atlantic and undertook the production of fine goods and have now practically supplied (if not over supplied) the domestic market, with the possible exception of specialties in colored and fancy goods and edgings, and these fabrics are being most skilfully produced

by American Mills in as fine constructions as the difference in labor cost will permit.

Co-incident with fine counts came the extensive use of combers and the by-product "comber waste" furnished the knitters a most desirable staple at very low cost and particularly suitable for many kinds of hosiery.

Improvements in combing machinery during the period have been of a radical nature through its adaptation to combing of the shorter staples, while the increased capacities on long staples have brought correspondingly diminished costs.

Among the most pronounced departures from established mechanisms and processes appearing as sequels to the distressful days of the middle nineties, were the automatic magazine looms and the mercerization of yarns and fabrics, which seems to further demonstrate the proposition that innovations of conspicuous merit and economic importance in the past have been exploited when our needs were most urgent.

The time is again ripe, the field is broader and more fertile, while more skilful mechanics, electricians, designers and promoters never lived, nor more ardent economists, merchants and philanthropists. The markets are in a state of expectancy not alone for the resumption of normal conditions of trade of which there is a glimmering hopeful ray, but for the products of genius to better utilize materials, beautify fabrics and with minimized cost to appeal to the fabrics as well as the necessities of consuming millions.

Former presidents in their addresses dealt almost exhaustively with the subject of cotton baling and marketing as far as it relates to the spinning industry. The needs of the manufacturer have been set forth with such eminent fairness and without disposition to injure other legitimate interests in attaining the benefits which would accrue to the user of the staple, it seems inexplicable that scarcely a suggestion has given evidence of having taken root. The bale is nearly identical with the one familiar to our forebears.

The excessive, expensive and slovenly tare is as flagrant as ever. The dimensions and density of the bales are not even disguised by a new garb on which the unspeakable hieroglyphic of the shipper might be deciphered by the archaeologist of the mill yard. The caricatures of the American bale no longer require the presence of Egyptian and Peruvian bales in the picture to accentuate its absurdity and the shafts of sarcasm directed by Europeans at this pre-eminently American product finds no wounded patriot to retort or defend the universally detested and condemned package.

The spinner pays the draft and the "freight" and is not shocked when his purchase arrives in the prescribed habiliments of a half century ago.

The recommendations as to the desirability of uniform contracts frequent adjustments of grade differences to more nearly correspond with commercial values—limitations upon the range of grades—exclusion of unspinable staples and closer relations between the exchanges and manufacturers and other measures of like import are again before an Exchange committee and there are indications of genuine intent to supplement the changes made effective last January (in which the lowest grade of deliverable tinged and stained cottons and quarter grades were eliminated) by rules governing the New York contract so that it may be kept more on a parity with Southern markets and yet not invite manipulation and corners.

The committee have held from three to five meetings weekly since the first of August and expect to devote another month to the hearing of cotton merchants, spinners and representatives of Southern cotton interests having found the time allowed in which to make report (September 1st) utterly inadequate when the magnitude of the enquiry become apparent.

You are, therefore, invited to appear before this board, either by committee or individually, and advocate the adoption by the Exchange of such by-laws regarding contracts as will in your judgment, and in spirit of equity to all concerned, best serve the cotton manufacturing industry and those dependent upon it. The tone of the preamble and resolution affords sufficient ground for optimistic anticipation and assurances that no future bureau report will declare that in important particulars the contracts are unbusinesslike and in violation of natural law.

The requirements of the fabricator of cotton goods are neither for a raw material cost which will not fairly renumerate every factor from the ploughman and picker to the storehouse, nor for a cotton contract which shall be inequitable or unbusinesslike in mercantile relations.

It is perfectly evident that a species of insurance, such as a future contract may well be conceived to be, should, at least, have the prerequisite of insurance, in being advantageous to the insurer and the insured. When a secure basis can be established on which the cost of goods can be definitely estimated, and the merchandising of these goods for forward delivery can be carried on with assurance and with freedom from extraordinary speculative risks the spinners will throng the exchanges and the cotton industry will add its enormous volume of transactions to those of interests which never expect to see a bale of cotton.

REFORESTATION.

Visions of disappearing forests, denuded mountains, flood scarred valleys, muddy rivers, soilless farms, coalless mines and powerless turbines have all haunted us, but the dreams have never before reached the nightmare stage when we might well paraphrase the proverb once quoted in this address, "Necessity is the mother of prevention."

Through a movement splendidly inaugurated by President Roosevelt for the conservation of natural resources the physiological moment has arrived for organizations, with vital power, to exert their most potent influences in co-operation with the National Conservation Commission to prevent by every legitimate method the further wicked and prodigal waste of the marvelous resources with which our country is blessed.

That these resources are not inexhaustible requires no argument or scientists' affirmation to "buyers of wood and users of water."

The destruction of natural resources is so appalling that the very figures used to represent it confounds our mathematics, though we live in an era of billion dollar congresses and half billion dollar corporations.

In my judgment, the National Association of Cotton Manufacturers should promptly offer to the

commission its moral support in suitable resolutions, and carefully select a committee to be of assistance in furnishing data relative to the industry, in making suggestions, or in serving in other capacities, when invited, as the members thereof may determine, but in accordance with the rules of this Association as to official action.

The expense account on every ledger is a record of economic wastefulness, and woe betide that slothful official whose knowledge of these pages of his financial history is clouded by neglect or is dissipated by forgetfulness.

Purchasing agents are incessantly reminded of the "necessary advances in prices on account of scarcity and high cost of raw material." Even during the present disheartening condition of trade this monotonous reason is faithfully and truthfully reiterated.

There is a popular apprehension that the standard of commercial honor attributed to those engaged in manufacturing and mercantile business of, say, fifty years ago, has suffered retrogression, and the experiences of the present year lend some color to such a view.

Comparisons of this kind even in the hands of most skilled analyists are practically valueless, for all business must continue to be transacted between trusting parties, the transactions will be dependent upon character and the business will be successful, if at all, when based upon righteous fundamental principles.

Ideally there should be no recourse to legally constructed and finically drafted contracts to insure a binding obligation between an honest buyer and an honest seller; (it being of course understood that terms and conditions are essential to complete and mutual understanding of the purchase and sale). The fact of there being written agreements cannot in the slightest degree affect the character of parties in interest and, therefore, are found to be technically defective when honor is lacking. We must look to the probity of the man who makes the contract rather than to the contract itself.

Either the nature of mercantile obligations is woefully misunderstood by many who assume to do business, or the revelation of unconscionable laxiness in business methods is a disgrace to their chosen occupation.

It is the duty of everyone to make their engagements as if there were to be no possible avoidance of fulfilment, and it is (with very rare exceptions) the bounden duty of contrasting parties to insist on faithful performance of the conditions of their agreement. Such a course insures a more conservative and healthy basis of credit, and would tend to prevent recurrence of the painful experiences of recent months.

The curse of over-buying and over-selling is nurtured by loose methods which have their source in careless habits of making and breaking moral obligations.

It is possible to draft contracts to exactly cover specific trades but very difficult to formulate one of universal application which will withstand the plausible and specious pretexts of present day practice.

I hope that this subject which has been treated merely in a general way will be earnestly debated during the days of the meeting, and that the conclusion of those who have given it profound study will be listened to by large assemblage of members.

The next business was the presentation of a report of the committee on standard specifications for staple grey goods.

Report of the Committee on Standard Specifications for Staple Gray Goods.

To the President of The National Association of Cotton Manufacturers:

The Committee which you appointed recently to consider and report upon the subject of "standard specifications for plain cloth" has been diligently at work during the past two or three months, but owing to the broad scope and importance of the subject, has not been able to conclude its work in time to make a complete report with final recommendations at the autumn meeting of the Association. Three committee meetings have been held. The first and second were devoted largely to organization and preliminary work. The third meeting was an all day session, lasting from 9 a. m. to 4 p. m., and your committee feels that great progress was made at that meeting, but not sufficient to justify more than a preliminary or tentative, report at this time. Your committee, therefore, requests further time for the completion of its work.

It is almost needless to call your attention to the enormous increase which has occurred during the past twenty-five years in the cotton manufacturing industry of this country and the very extensive plane on which this industry is now conducted. Accompanying this growth in manufacturing and distribution, there has been no corresponding advance toward the standardization of cotton manufacturing products, nor any real growth toward uniformity of practice, or terms under which such products shall pass from manufacturer to consumer, or from seller to buyer. In fact, it might even appear, from the multiplicity of ideas as to what should be considered as good delivery on any particular sales note for cotton goods, that, instead of a tendency toward standardization or uniformity of practice, there has been, accompanying the growth in this industry, a corresponding growth in the indefiniteness, of the bases upon which transactions between manufacturer and consumer are consummated. For instance, there are as many ideas in regard to what is meant by the simple statement of width, in connection with any particular lot of goods, as there are persons who have anything whatever to do with that particular lot of goods, and there is no definite commercial specification, rule or custom existing in this country that can be appealed to, in the case of any controversy arising over such a point. The same is equally true of the number of threads per inch and the weight per yard, or per piece, or per bale. These are largely manufactur-

ing problems, which could be solved by the use of more complete, or more detailed, specifications under which goods are to be manufactured. The same indefiniteness, or lack of uniform understanding, exists in the case of the legal problems that arise in connection with contracts under which goods are manufactured and delivered. If any portion of the goods in one bale are not up to specifications, what are the legal rights of the buyer and seller in the adjustment of that matter? Shall the whole contract be cancelled, or just that portion covered by the delivery in which the unsatisfactory goods are found, or perhaps, only the identical bale, or the identical piece, or yard, that might be found not up to specifications? Everybody who has anything to do with such a transaction has an idea on the subject, but there is no custom clearly defining the question,—no uniformity of practice regarding it. The same indefiniteness exists right through the whole list of items which constitute a contract, under which cotton goods transactions in this country are made between manufacturer and consumer, or buyer and seller. This indefiniteness and lack of uniformity are not improved one bit by our form of government which results in just as many different laws, governing certain features of a contract, as there are states in the Union. A contract made without regard to this multiplicity of state laws, or incomplete in detail or character, leaves open the way to trouble.

The indefiniteness, or lack of detail, that exists today in the ordinary cloth specifications used by the trade, as well as the lack of definiteness and uniformity of practice in connection with contracts, have resulted in so many misunderstandings, cancellations, litigations, and other troubles, that the need of same improvement in specification and contract has become very apparent. Assuming a desire to be fair, both by the manufacturer and the consumer, it has, nevertheless, been impossible to amicably and satisfactorily conclude differences of opinion in regard to the character of goods delivered, simply from lack of definiteness, due to the widely varying practice governing such transactions. To provide some authoritative standards for this purpose, will certainly lessen claims and all unpleasant features and generally facilitate the manufacture, as well as the purchase and consumption, of cotton goods.

It was with the idea that a great deal of the indefiniteness, regarding manufacturing points in connection with ordinary gray goods, could be cleared up by study of the subject and by formal action of this Association, that your committee was recently appointed to investigate and report in regard to the matter. It is with the same idea that the American Cotton Manufacturers' Association has recently appointed a committee to investigate and report on the subject of a uniform contract which may be used in the case of any sale of cotton goods of any description made within the United States of America. The work thus undertaken by the two Associations is very different and, at the same time, very closely allied. Your committee on cloth specifications is dealing with certain manufacturing problems in connection with gray cloth. The contract committee of the American Association is dealing with the legal problems involved in a contract for any kind of cotton goods. The work of the two committees, if put together, should provide a form of sales note which could and probably would, be adopted by the trade at large throughout this country, covering the sale and purchase of gray cloth. It is clear that the two committees and the two Associations should co-operate in their work. Your committee feels safe in assuring you of the co-operation of the American Association in its work and asks that its authority shall be extended with a view to cooperation with the committee of the American Association, in order that your committee may include in its final report a recommendation of a form of uniform contract, covering the sale and purchase of cotton goods.

Should this Association take favorable action upon this request to enlarge the scope of this committee's work, your committee asks for the authority to incur expenses including legal advice not to exceed $2,000, and without further direction of the Association. The necessity for this request is very apparent. While the members of this Association should be competent to pass judgment upon manufacturing details of cloth specifications, it is not to be expected that they shall also be experts upon the legal questions involved in the production of a form of uniform contract for use in this country. In order that the work on a uniform contract may stand the test of the courts in forty-six different states, and, in general, so that the work shall be complete and accurate from a legal point of view, it is of the greatest importance that it should be submitted to legal authority before being submitted to the Association for its approval. It is probable that an expenditure of $2,000, for the purpose mentioned, will not be necessary, but your committee feels that it should have the authority to go to that limit if necessary, and that this amount is quite meager, compared with the direct and indirect benefit to members of this Association, should this work of the two associations be successful.

Before real progress could be made by your committee, or even before any work at all could be done intelligently, in connection with the details of specifications for plain cloth, it was necessary to more clearly determine and describe the work desired of the committee, by adopting definitions of certain words and terms involved in the appointment of the committee, and by adopting, or determining, certain fundamental principles, indicating the point of view from which the work should be undertaken.

The following definition of "specification" was adopted: "A written statement, containing a description or enumeration, of particulars and limits." By "standard" was understood, "That which is established as a rule, or model, by authority, custom, or general consent."

What was intended by "plain cloth" brought forth such a difference of opinion, that a special sub-committee was appointed to report on the subject, as a result of which, by vote of the whole committee, it was decided that the scope of the committee's work should cover "staple gray

goods," not because the term "staple gray goods" is synonymous with "plain cloth," but because it was believed that staple gray goods, though covering a wider variety of goods, was more definite in meaning and would more fully cover the scope which was expected of the committee. The question, "What is plain cloth?" will receive separate attention in a paper to be presented at the autumn meeting of the Association.

The work in hand, therefore, is understood to be the preparation of written statements specifying particulars and limits, covering the more common details of construction of staple gray goods, which statements shall better define for commercial use the incomplete specifications heretofore generally used, and which shall be accepted as a standard by commission houses, converters, and, in fact, by all buyers and consumers, through the approval of the same by this Association.

The question arises, from what point of view should specifications for staple gray goods be drawn. Should they be made up so that only the very best mills in the country would be able to comply with them, and to suit only the most particular requirements of the trade? Or, should they be so drawn that they would come within the possibilities of the average manufacturer and within the requirements of the average consumer? Or, should they be so broad as to enable any manufacturer to come within their limits, even if too broad to fulfill the requirements of every consumer? It is clear that, in any case, specifications would have to be thoroughly practical, and in order to be of the greatest usefulness, would have to come within the possibilities of the largest possible number of mills, and within the requirements of the largest possible number of consumers. It is also clear that specifications should be simple and clear, and not contain details that might be desirable only in connection with exceptional circumstances. It is also clear that cloth specifications should contain no limitations or descriptions which could not be readily verified, or determined, through an examination, measurement, or test of the cloth itself. Admitting that it would be impossible to exactly define the point of view from which this matter should be considered, it was deemed best by your committee to at least define such a point of view, in general terms, as it did through the following motion:

"Resolved, That the committee deal with this question in as broad a manner as possible, having in mind the lack of uniform standards at present, and define standards for staple gray goods, that shall be acceptable to the buyer and practicable for the manufacturer."

We now come to an enumeration and consideration of the particular points, or items, upon which the specifications at present in commercial use are lacking in definiteness or in detail. There are three general items which could be much more clearly defined, namely:

Width,
Count,
Weight.

There are other items upon which your committee may, or may not, make a recommendation, either because of the great difficulty in so doing, or for lack of necessity or desirability therefor, namely:

Quality of Cotton,
Quality of Yarns,
Strength of Warp and Filling,
Length of Cuts,
Seconds,
Rejections.

No final conclusion, in regard to more complete specifications on the points mentioned, have been reached by your committee, but some tests have been made as well as some investigations of commercial practice elsewhere. There has been some consideration and discussion in committee of the questions involved in connection with each item. It seems best, at this time, to limit this report on the points just mentioned to suggestions and questions regarding them, in the hope that, by so doing, the committee may receive from other members of the Association and from any others interested, valuable suggestions and information that will assist in the work.

In connection with the question of width, it was deemed advisable to specifically define how the width of cloth in any particular case, for the purpose of the subject in hand, should be measured. This was done through the following motion:

"Resolved, That, after folding or rolling, ready for delivery, goods shall be measured at right angles to the selvages when laid open on a flat, horizontal surface and smoothed out by hand, but not stretched."

To further define width, in the case of any given lot of goods, beyond the mere statement that it shall be so many inches, the principal question that arises is,—for general practice, what variations from the nominal, or stated, width shall be allowed, and how shall those variations be defined?

It is, perhaps, needless to mention here that it is absolutely impossible to manufacture cotton cloth so that, when ready for delivery, it shall everywhere measure exactly some stipulated width, even when measured under exactly the same conditions. Variations from the exact desired width will occur due to atmospheric and manufacturing conditions, which, from a practical point of view, it is absolutely impossible to overcome. Hence the above question, and hence, in fact, the general necessity for more clearly defining what is intended by a statement of nominal width.

Should the allowable limits be expressed in fractions of an inch, or in percentages of width?

Should they be the same for all widths, or vary,—and, if different for different widths, in what way should they be different?

Should such allowable variations be different for fine yarn goods than for coarse yarn goods? If so, in what respect, and to what extent, and how should goods be classified for such purposes?

Should allowable variations be different for goods with a large number of sley and pick per inch from those with a small number?

Should allowable variations apply to each inch or yard of goods, or should they cover only a certain portion of the goods—such as 20 per cent.—or

should they be the average of a whole piece, bale, delivery, or contract?

If limits of variations should be defined for the average, or for a portion of the whole, as suggested above, should limits also be defined, within which every place in every yard delivered must come?

Should the allowable variation from a stated width be the same below such width as above? If not, what relation should the allowable variation under bear to that over?

Your committee is considering the possibility of expressing the allowable variation of width in percentage of nominal width and making it the same for all classes of goods, and, possibly, placing it at three-fourths of one per cent. or at one per cent., either under or over the nominal width, every place in all goods delivered to come within such limit. It has been suggested that the allowable variation over the nominal width should be double the amount allowed under, both in order to avoid penalizing a manufacturer who is disposed to give more than full measure, and in order to increase the total allowable variation, for the benefit of the poorer, or less fortunate mills, who would otherwise have difficulty in coming within the specifications.

Suggestions and criticisms on these points are solicited.

To more clearly define what is intended by a statement of so many warp or filling threads per inch, is a comparatively easy matter in the case of the warp, but difficult in the case of the filling.

The questions that arise in connection with defining limits of variation for the sley, exclusive of selvages, are somewhat as follows:—

Should every inch in the width, and hence the entire width, contain the full number of ends specified?

Should variations for sley be expressed in per one-quarter of an inch, or per one inch, or in total width of the goods, exclusive of selvages, and what should those variations be?

Assuming that, on the theory of averages, there should be less allowable variation in the entire width per one inch, or per one-quarter of an inch, what should such allowable variations be?

What should be the allowable variation per one-quarter of an inch, per one inch, or per entire width, over the nominal sley?

Should allowable variations in sley be expressed in number of threads per inch, or in percentages?

Should allowable variations apply to every place, or apply to an average of some specified number of places taken at random, or, perhaps to both?

Similar questions arise in connection with the count of the filling. The subject, however, is more difficult and more complicated, because the loom mechanism, which places the filling yarn in cloth, is far less exact in its operation than the mechanism controlling the sley. In fact, variation in pick is the cause of a large percentage of unsatisfactory goods. Most manufacturers will assert that the pick of their goods will not run below the nominal, or stipulated, number of picks per inch, but if they will investigate the subject carefully, they will probably find that they are mistaken, and that there is a considerable variation between the maximum and minimum number of picks per inch, counted in a large number of places in a number of pieces, taken from a number of looms. The following questions are some of those that arise, in attempting to define limits of variation for filling count.

Should allowable variation be expressed in the count of one-quarter of an inch, or one inch, or both?

Should the allowable variations be expressed in picks, or in percentage?

Should these variations apply to an average of a specified number of places taken at random?

Should a certain portion of the goods, say 20 per cent., as defined by the average of a number of counts taken at random, be allowed to run under in count, provided the remainder average all right?

Should the allowable variation above the nominal count be the same, or more than that allowed below?

By defining variations in any such way as indicated above, can "thick and thin places" be covered, or should they be separately defined, and if so, how?

Should variation limits be different in the case of fine yarn goods from coarse yarn?

Should they be different for goods with a large number of picks per inch from those with a small number?

Your committee has not considered the subject of count sufficiently to justify making any recommendation. Possibly the present consensus of opinion of the members would crystallize around a variation of one thread per inch in the warp and three in the filling, within which every place must come. The English practice, according to a Manchester authority, permits the filling to run two picks under the nominal pick at any point.

Suggestions and information on allowable variations in count are also solicited from members of the Association, or others.

The question of allowable variations in weight is one which your committee has hardly had time to consider at all, but, in answering it, a large number of preliminary questions arise, and might be enumerated somewhat as follows:—

Before attempting to define allowable weight variations, should standard atmospheric, or moisture, conditions be established, under which weights must be taken for these purposes?

If not, what allowable variation should there be to cover solely the variation in the amount of moisture in goods?

Should allowable variations in weight apply to every yard or every piece, or the average of a bale or delivery, or the entire amount of the contract, or, perhaps, some or all of these units?

Should they be expressed in decimal fractions of yards per pound, or in percentages?

Should they be different for coarse and fine goods?

For high count and low count?

Should the allowable variation in excess of the nominal weight be the same, or more, than under, and, if more, how much more?

Should a certain portion of a delivery, say 20 per cent., be allowed to run under weight, providing the remaining eighty per cent. averages equal to the nominal weight, and if so, how much under

the nominal weight should such portion be allowed to run?

In Great Britain, the weight of goods is commonly expressed in pounds per piece of fifty yards, and, by trade custom, a variation of approximately three per cent. from the nominal weight of any piece is allowed the manufacturer.

As indicated above, however, your committee has scarcely reached the subject of allowable weight variations, and must content itself, for the moment, in presenting the above suggestions and queries, and with asking the members of the Association, and others, for suggestions and information bearing upon the subject.

Your committee will probably confine itself, for the time being, to a consideration of the points previously described, believing that it has a very large problem to solve, without considering any questions relating to: Quality of cotton; quality of yarns; strength of warp and filling; length of cuts: seconds; rejections.

In fact, most of these points should be considered as special, and defined in further detail only when required in special cases. There are some features in connection with those points, however, which could, with benefit to the trade in general, be given special study with a view to standardization. For instance, a standard method of testing strength of cloth, either warp or filling, might be defined and established; likewise the determination of what constitutes a second, also a rejection.

The work undertaken by this Association, which your committee has thus incompletely described and only to a small extent carried out, is one which should be of great interest to all those engaged, directly or indirectly, in the manufacture, distribution, or consumption of cotton cloth. Your committee courts criticism, suggestion, and information both now and later. Now, while the subject is up, all members of the Association, and all others who are interested in the matter should lend a hand, not only to your committee on cloth specifications, but to the committee of the American Association on uniform contract, in order that the results obtained by both committees shall be practical, clear, intelligent, and of the widest usefulness to the cotton goods trade of this country. Communications in regard to any feature of your committee's work may be addressed to Albert F. Bemis, Chairman, P. O. Box 5173, Boston, Mass.

Respectfully submitted,

Albert F. Bemis, Chairman, Secretary Bemis Bro. Bag Co.
Frederick A. Flather, Secretary, Treasurer Boott Mills.
Daniel M. Bates, Asst. Supt. Jos. Bancroft & Sons Co.
S. Parker Bremer, of Parker, Wilder & Co.
John Eccles, Agent Ponemah Mills.
Alfred M. Goodale, of A. M. Goodale & Co.
Edwin Farnham Greene, Treasurer Pacific Mills.
George H. Hills, Treasurer Davol Mills.
Frederick B. Macy, Treasurer Soule Mills.
James R. MacColl, Treasurer Lorraine Mfg. Co.
Lewis W. Parker, Treasurer Olympia Cotton Mills.

The feature of the second session on Tuesday was the address on Forest Preservation by Hon. James S. Whipple, Forest Commissioner, Albany, N. Y. His eloquent and forcible argument on this important subject made a deep impression on his hearers. He was not only eloquent, he was thoroughly practical and showed clearly both the widespread disaster that would follow a neglect of forest preservation and the comparative ease with which the problem could be solved if met resolutely and intelligently. There are few men capable of discussing this subject in such a convincing manner as is Commissioner Whipple. In view of this fact and the need of arousing public opinion to the importance of the work, it would be an excellent plan to present his argument to the public by means of the phonograph.

J. R. Montgomery of Windsor Locks, Conn., opened the discussion from the manufacturing standpoint by a narration of his experiences and observations as a user of water power on the Connecticut River.

"As to the importance of forest preservation to the manufacturers who derive their power from the streams that flow from the White Mountains and the Appalachian districts there is," he said, "seemingly a difference of opinion. When the question of the importance of forest preservation to manufacturers came to my attention I deemed it to be a timely topic and one worthy of careful consideration by all parties interested in New England water powers. I still believe it to be vitally important to the future welfare of navigation, and the water powers on the New England rivers. In examining the records of the actual flow of the water in the Connecticut River, at present, as compared with thirty years ago, I find that they do not indicate any perceptible change, and this agrees with my own personal observation and experience. After consulting with many old river men, and with those interested in the use of these waters, I am confirmed in this opinion. Notwithstanding the fact that the large, soft timber has been cut off at the head of this river by the great lumber companies, there are yet more acres covered with a smaller growth than there has been any time during the last forty years. The abandoned farms, particularly the pastures of such farms, have grown up so that whatever influence the cutting off of the large timber may have had upon the constant flow of the river, this new growth with its accumulations may have taken its place as an element of compensation. The hydraulic department of the Holyoke Water Power Company have records of the daily flow of the Connecticut River for forty years. They are positive in their assertion that the records do not indicate any change attributable to the cutting off of the timber at the head waters of this river. They are convinced we are more dependent upon the average precipitation of rain and snow than upon the forest conditions."

Mr. Jas. P. Tolman contributed a paper on this subject, and said in part:

The subjects of forest preservation and reforestation appeal so strongly to the sentiments of those of us who have made our pleasures in the hills, that we must put ourselves under some restraint when discussing them in their relation to our business. Though manufacturers, we are men, and our feelings urge a control of our opinion.

If we are located upon the hill streams, gathering the rainfall in carefully constructed reservoirs, and watching the gates to see that the precious drops that turn our wheels do not escape without paying their toll, we are quick to recognize that our dependence upon water supply and the steadiness of this supply are closely connected with forest maintenance. If again we are located on the great rivers, flowing to us from a distance of some hundreds of miles, rising into flood or falling into riverlets from causes so distant that they reach us only through these results, we are tempted to the expression that those fellows up in another state would do well to guard more carefully the sources of the streams, and to blame our own misfortunes upon the prodigality of others.

If, on the contrary, we are running steam mills in the coast towns, we are not justified in congratulating ourselves on our independence of variable sources of power, and we do not rightly feel that the water power men may fight their own battles? Do we not feel justified in saying that though as men we may desire the conservation of our natural beauties, we have as manufacturers nothing to do with it?

It must, however, be conceded that the water power interests are of sufficient magnitude to warrant the general attention of manufacturers as a class, and the preservation and extension of this source of power should have our united study; and the effect of forestation upon these powers becomes a matter requiring our consideration.

At present there is no general agreement that the quantity of annual rainfall in a locality is dependent upon the amount of forestation, but it does seem to be generally allowed:

1. That the regularity of the run-off of water is very much influenced by the amount of forest, the diminution of forestation tending greatly to magnify the intensity of periods of both flood and drought.

2. That the removal of trees from the upper reaches of the mountains, where the soil is thin, tends to a washing which in many cases leads to denudation of the rock, thus permanently reducing the forest area; and which also in many cases causes a filling of reservoirs, thus still further diminishing the regularity of run-off.

3. That the growth of underbrush which follows tree cutting gives fuel for forest fires which oftentimes delays almost indefinitely the natural processes of reforestation.

4. That regulation of the methods of lumbering, and care and patrolling thereafter, can very largely influence and minimize the evil effects ordinarily following lumbering operations.

5. That the replanting of cut areas where soil denudation has not occurred is feasible, and may usually be successful if care is given to keep out fire.

6. That the following of restrictions as to the methods of cutting; the planting of young trees, and the patrolling and care of forest, are all commercially justifiable as paying for themselves.

Under the foregoing admissions, it would appear that as manufacturers, we may economically, and apart from aesthetic considerations—

a. Regulate the methods of cutting timber; plant young trees in waste places, and guard against the spread of fire by plowing furrows and organizing a fire service for the lands coming under our immediate control.

b. Pursue the same method by means of the organized reservoir or water power companies with which we are affiliated.

c. Urge legislation controlling the methods of cutting timber, particularly for the prevention of such methods as shall lead to denudation of the rock; this under the general principle that one man is not permitted to so use his property as to menace the welfare of others.

d. Give our favor to the establishment of forest reservations either under corporate ownership for gain, or by state or national ownership and control.

The above we may do under economic and businecc considerations. Beyond this, we may as men, separate and apart from the commercial side, use every effort we can to promote public control of the public agencies of recreation, especially to preserve for our own successors those sources of mental inspiration and moral uplift that separate us from the inferior creatures.

At the third session the report on the Paris Cotton Congress by James R. MacColl was followed by the reading of the following letter from C. W. Macara, President of the International Cotton Federation in response to a letter from Secretary Woodbury congratulating Mr. Macara on his having been made a Chevalier of the Legion of Honor:

15 Cross St., Manchester.
Sept. 14, 1908.

C. J. H. Woodbury, Esq., Secretary and Treasurer, The National Association of Cotton Manufacturers, Boston, Mass.

Dear Sir: I have to thank you very cordially for your letter of the 27th ulto., and for the notice, which you kindly enclose, of the 85th Meeting of your Association to be held at Saratoga Springs at the end of this month.

Had I been able to visit the States at this time it would have been a great pleasure to me to have accepted your invitation. I should have been glad of the opportunity of renewing the acquaintance of the gentlemen I met last autumn, as well as of taking some part in your proceedings.

The Report of the Atlanta Convention has now

been distributed to all parts of the world, and I feel sure its effect will be to advance the good feeling between Cotton Growers and Cotton Spinners. The International Cotton Federation has been at a good deal of trouble and expense in issuing the Report, and I am very pleased to see that you are calling attention to it in your circular of Sept. 1.

I hope progress is being made with the formation of the Committee representing the Association of Growers and of Manufacturers on your side with which the International Cotton Federation is cooperating; and I also sincerely hope that at your meetings the advisability of The National Association of Cotton Manufacturers joining this International Federation will be fully considered and a decision to join arrived at. The benefits derivable from the work and influence of a body which would, with the membership of your two American Associations of Manufacturers, embrace the whole world of cotton manufacturing interests are obvious, and the power which it would wield in dealing with the many abuses with which the cotton trade is confronted would be irresistible.

I need hardly remind you, I think, that the International Cotton Federation never, under any circumstances, interferes with the conduct of the industry in any separate country. It deals entirely with matters which affect the whole trade, and in which all are equally interested. I am,

Yours faithfully,

C. W. Macara.

On Wednesday there was an excursion to Schenectady, practically all of those in attendance at the Saratoga meeting accepting the invitation of the General Electric Co. to visit the works of this corporation. Lunch was served in the company's dining hall, after which the visitors were conducted through the works, a corps of guides explaining various manufacturing operations in this vast establishment.

At the evening session on Wednesday resolutions were adopted as follows and new members were admitted:

Resolutions.

Resolved, That the National Association of Cotton Manufacturers again recognizes the vital importance of conserving the National Forests Reserves to diminish the growing evils of drought and flood and recommends the passing of Laws by States and Nation that will apply in correction of loss through fire, waste and unscientific lumbering, and encourage the planting of new trees necessary to accomplish an increase in our wooded area. It has been fully established by experiences in other countries that competent forest cultivation results in an appreciable increase of timber products. We heartily endorse the effective work of the National Commission for the Conservation of Natural Resources and recommend that our Association cooperate with this commission in furthering our mutual interests.

Resolved, That the National Association of Cotton Manufacturers carefully considers the definition of "Plain Weave" and "Plain Cloth" devised by Mr. A. M. Goodale after collaboration with other members of this Association, for possible modification, or adoption, at our next meeting.

The definitions as amended read as follows:

"A plain weave uses two harnesses, or any number of harnesses, working as two, each harness carrying its proportionate part of the warp threads drawn in uniformly and alternately, and each thread of the warp alternately goes over and under each thread of the filling.

"Note.—Any number, any kind of yarn may be used either in warp or filling.

"Plain cloth is cloth made in a plain weave of grey yarn (i. e., not colored), in which all of the warp threads, except the selvage, are made of one number of yarn, drawn uniformly one or two ends in one dent through reed and with practically uniform tension, and in which the filling threads are one number of yarn.

"The numbers of the warp and filling need not be the same, but when different numbers are used, the difference must not be so great as to produce a noticeable effect in the cloth, and both the warp and filling threads must have approximately standard twists."

Resolved, That the National Association of Cotton Manufacturers endorses the method of identifying cotton bales which consists in placing a strip of cloth having repeated plain markings under the hoops of the bale or any other method that will provide equal security against elimination or effacement of properly lettered shipping directions.

Resolved, That the National Association of Cotton Manufacturers tenders its thanks to Mr. Lewis W. Parker of Greenville, S. C., for his kindly assistance to the members of our Committee on Specifications for plain cloth and his services in procuring the cooperation of the Committee on Contracts of the American Cotton Manufacturers' Association.

Resolved, That the National Association of Cotton Manufacturers tenders its thanks to the President, Directors and other officials, of the General Electric Company, who have given us the freedom of their Works and entertained us with their kindly hospitality. The opportunity to witness the manufacture of the complex apparatus for the generation of electricity, which has wrought such radical and beneficial changes in the cotton mills, particularly in their illumination and their transmission of power, has been highly instructive, and sincerely appreciated.

Resolved, That the National Association of Cotton Manufacturers tenders its thanks to the Mohawk Golf Club and the Schenectady Ladies' Committee for courtesies extended.

Resolved, That the National Association of Cotton Manufacturers tenders its thanks to James D. McNulty, Esq., President of the Village of Saratoga Springs, for his address of welcome, and to the Hon. James S. Whipple, Walter S. Newhouse,

E. Howard Bennett, Lewis Saunders, and William O. Webber for their interesting papers presented at this meeting.

New Members Elected.

FOR ACTIVE MEMBERSHIP.

Robert J. Belcher, Supt. Corr Mfg. Co., 54 Middleboro Ave., East Taunton, Mass.

Herbert E. Davis, Supt. Warren Cotton Mills, West Warren, Mass.

Grosvenor Ely, Asst. Mgr. Ashland Cotton Co., Jewett City, Conn.

John Prescott Farnsworth, Pres. Providence Dyeing, Bleaching and Calendering Co., 52 Valley St., Providence, R. I.

A. F. Griasnoff, Mgr. Yaroslavl Cotton Mfg. Co., Yaroslavl, Russia.

Robert Hoguet, Pres. New York Silk Conditioning Works, 138 Spring St., New York, N. Y.

Samuel Hyslop, Mgr. Saxony Worsted Mills, Newton, Mass.

Harry H. Johnson, Agt. Fitchburg Duck Mills, Fitchburg, Mass.

John T. Mercer, Supt. Cloth Dept. Arlington Mills, 23 Central St., Methuen, Mass.

William H. Merriman, Supt. Standard Spinning Co., Oswego, N. Y.

Lewis W. Parker, Pres. and Treas. Olympia Cotton Mills and Victor Mfg. Co., Greenville, S. C.

Silas Rooney, Supt. La Tosca Yarn Mills, Catherine and Jay Sts., Utica, N. Y.

Everett E. Salisbury, Treas. Spencer Yarn Co., 20 Academy Ave., Providence, R. I.

Herbert Walmsley, Asst. Supt. Wamsutta Mills, 43 Arnold St., New Bedford, Mass.

Benjamin I. Ward, Pres. Bellman Brook Bleaching Co., Fairview, N. J.

Aubrey E. Meyer, West Champlain Silk Mills, Whitehall, N. Y.

FOR ASSOCIATE MEMBERSHIP.

Benjamin G. Buttolph, Vice Pres. & Engr. Manufacturers' Mutual Fire Ins. Co., 815 Banigan Bldg., Providence, R. I.

D. A. Corey, Mgr. S. F. Bowser & Co., Inc., 255 Atlantic Ave., Boston, Mass.

Fred C. Freund, Agt. for Bleachers, Dyers, Printers and Finishers, 320 Broadway, New York, N. Y.

John H. Giles, Gen. Mgr. & Vice Pres. Klauder-Weldon Dyeing Machine Co., Amsterdam, N. Y.

Albert F. Knight, Jr., Sec. and Asst. Mgr. Providence Machinery Exchange, Board of Trade Building, Providence, R. I.

John W. Mayor, Thomas Mayor & Son, 26 Olney St., Providence, R. I.

S. St. J. Morgan, Engineer Westinghouse Electric & Mfg. Co., 131 State St., Room 716, Boston, Mass.

Mark Packard, Pres. Pocahontas Land Corp., Cross Creek Coal Co., Mutual Life Bldg., Buffalo N. Y.

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Albert H. Sawtell, Agt. Coldwell-Gildard Co., 3 Green St., Providence, R. I.

H. Ernest Stafford, Broker of Factory Property, P. O. Box 896, Providence, R. I.

List of Members and Guests in Attendance.

Connecticut:
- Wm. I. Woodward, Agent Shetucket Co., Norwich.
- Clinton W. Atwood, Secretary Williamsville Mfg. Co., Killingly.
- H. C. Atwood, Treasurer Williamsville Mfg. Co., Killingly.
- J. R. Montgomery, President The J. R. Montgomery Co., Windsor Locks.
- Mrs. J. R. Montgomery, Windsor Locks.
- Mrs. Joseph Merriam and Miss Merriam, Middletown.
- L. B. Cranska, Floy Cranska Mills, Moosup.
- Joseph Merriam, President Springfield Webbing Co., Middletown.
- J. C. Chidsey, Bristol, Conn.
- Mrs. M. S. Cornell, Middletown.

Maine:
- George Fish, Treasurer Knapp Spinning Mills, Richmond.
- Clement A. Wakefield, Selling Agent Saco & Pettee Machine Shops, Biddeford.
- Harry D. Lord, Saco & Pettee Machine Shops, Biddeford.
- Hartley L. Lord.

Maryland:
- John P. Judge, Baltimore.

Massachusetts:
- J. L. Sanford, Assistant Sales Manager Barber-Colman Co., Boston.
- Lewis T. Shurtleff, Agent Pairpont Corp., New Bedford.
- Abbott P. Smith, Soule, Butler & Kilburn Mills, New Bedford.
- Wallace I. Stimpson, Milford.
- Gay D. Thayer, Worcester.
- R. M. MacIntosh, L. H. A. Schwartz & Co., Boston.
- Fay H. Martin, President Textile Machinery Co., Boston.
- Meldon H. Merrill, Westinghouse Electric & Mfg. Co., Boston.
- John H. Nelson, Treasurer Wm. Firth Co., Boston.
- Wm. R. Noone, Boston.
- Sidney B. Paine, General Electric Co., Boston.
- Frank W. Reynolds, Boston.
- Richard H. Rice, West Lynn.
- Mrs. Alexander S. West, New Bedford.
- W. S. Williams and Mrs. Williams., North Adams.
- Mrs. C. J. H. Woodbury, Miss Louise Woodbury, Miss Laura B. Woodbury and Miss Alice P. Woodbury, Lynn.
- Daniel J. Danker, Danker & Marston, Boston.
- Frederick A. Flather, Treasurer Boott Mills, Boston.
- John P. Marston, Danker & Marston, Boston.
- C. J. H. Woodbury, Lynn.
- Geo. A. Ayer, West Boylston Co., Easthampton.
- Lewis E. Barnes, Methuen.
- George F. Steele, Boston.
- Edward E. Palmer, Boston.
- Frank D. Perry, Boston.
- Mrs. William C. Plunkett, Adams.
- Melvin H. Coffin, Selling Agent Whitin Machine Works, Whitinsville.
- Charles B. Burleigh, Boston.
- James A. Cooper, Whitin Machine Works, Whitinsville.
- George B. Emmons, President Emmons Loom Harness Co., Lawrence.
- George B. Erhard, Vice President Stafford Co., Readville.
- M. A. Metcalf, Boston.
- S. St. J. Morgan, Boston.
- Frank B. Kenney, T. C. Entwistle Co., Lowell.
- Nathaniel Kinsman, Boston.
- Mrs. J. C. Smith and Miss Smith, Fall River.
- Mrs. Rufus A. Soule, New Bedford.
- Frederick B. Macy, Treasurer Soule Mills, New Bedford.
- Alexander Makepeace, Richard Borden Mfg. Co., Fall River.
- Mrs. Edgar F. Hathaway, Boston.
- Mrs. S. C. Lowe, Boston.
- David Lowe, Parkhill Mfg. Co., Fitchburg.
- Stephen C. Lowe, Agent J. Hetherington & Sons, Ltd., Boston.
- Mrs. Fay H. Martin, Boston.
- Mrs. S. St. J. Morgan, Boston.
- Miss Esther G. Nelson, Lynn.
- John T. Mercer, Lawrence.
- Mrs. D. A. Corey, Boston.
- S. S. Dale, Boston.
- Mrs. Bradford D. Davol.
- George E. Richardson, Boston.
- Frank L. Nagle, Boston.
- William C. Nairn, Lawrence.
- Philip L. Nazro, Boston.
- Charles J. O'Malley, Mrs. O'Malley and Charles D. O'Malley, Boston.

Alfred M. Goodale, Boston.
Harry Gage Baker, Stafford Co., Readville.
Frederick H. Bishop, General Manager Universal Winding Co., Boston.
Arthur Cecil Butler, E. A. Leigh, Boston.
George F. Grant, Jr., Treasurer Grant Yarn Co., Fitchburg.
Edwin Farnham Greene, Treasurer Pacific Mills, Boston.
Z. D. Hall, Berkshire Cotton Mfg. Co., Adams.
George Otis Draper, Draper Co., Hopedale.
George W. Dunn, Agent Lancaster Mills, Clinton.
John A. Fernley, Butler Mill, New Bedford.
William Firth, President American Moistening Co., Boston.
Frank H. Burt, Newton.
Fred K. M. Jones, Boston.
C. E. Dow, Selling Agent American Moistening Co., Boston.
Nathaniel Kinsman, Jr., Boston.
Mrs. Frank B. Kenney, Lowell.
Franklin W. Hobbs, Treasurer Arlington Mills, Boston.
P. T. Jackson, Jr., Treasurer Lowell Weaving Co., Lowell.
Joseph B. Jamieson, President Holmes Knitting Co., Boston.
Leonard Johnson, Page Mfg. Co., New Bedford.
R. R. Kelly, Williamstown (Mass.) Mfg. Co.
Andrew J. Currier, Agent Nonquit Spinning Co., New Bedford.
Bradford D. Davol, President Barnard Mfg. Co., Fall River.
C. H. Clark
Albert F. Bemis, President Jackson Fiber Co., Boston.
Orin F. Bennett, Naumkeag Steam Cotton Co., Salem.
George H. Booth, Agent Gosnold Mill, New Bedford.
Joseph Brierley, W. C. Plunkett & Sons Warp Mill, Adams.
Frank B. Comins, Treasurer American Moistening Co., Boston.
J. C. Smith, Chace Mills, Fall River.
Rufus A. Soule, President Soule Mill, New Bedford.
Edgar F. Hathaway, General Manager American Warp Drawing Machine Co., Boston.
Carroll Hutchins, Boston.
Mitchell Johnson, Methuen.
Mrs. Leonard Johnson.
Charles T. Plunkett, Secretary Berkshire Cotton Mfg. Co., Adams.
William B. Plunkett, Manager Berkshire Cotton Mfg. Co., Adams.
Alfred Sagar, Arlington Mills' Cotton Department, Methuen.
Mrs. Edwin Farnham Greene, Boston.
E. D. Hague, Boston.
Mrs. Z. D. Hall, Adams.
Augustus DeCort, Treasurer DeCort Yarn Co., Boston.
Charles W. Dennett, Vice President Hadley Mills, Holyoke.
Theo. O. Nicholson, Treasurer Millen Mills, Boston.
Oscar L. Owen, Whitin Machine Works, Whitinsville.
Herbert E. Walmsley, Agent Wamsutta Mills, New Bedford.
Mrs. Frederick B. Macy, New Bedford.
E. W. Hitchcock, Boston.
W. B. Hodge, Boston.
C. W. Blackway, Fall River.
L. G. Goodrich, Boston.
A. M. Fraser, Fall River.

Montreal:
C. B. Gordon, Vice President Dominion Textile Co., Ltd.
J. B. Mole, General Manager Dominion Textile Co., Ltd.
Arthur O. Dawson, Manager Canadian Colored Cotton Mills Co.

New Hampshire:
M. F. Foster, Milford.

New Jersey:
Jesse A. Knight, Argo Mills Co., Gloucester City.
William H. Loftus, Clark Thread Co., Newark.
Wm. L. Lyall, Treasurer Brighton Mills, Passaic.
Herbert Logan, Paterson.
George C. Osborn, Harrison.

New York:
A. L. Rohrer, Schenectady.
Mrs. A. L. Rohrer, Schenectady.
D. B. Rushmore, Schenectady.
Lewis Sanders, New York.
I. M. Simpson, New York.
J. R. Lovejoy and Mrs. Lovejoy, Schenectady.
H. M. MacMaster and Mrs. MacMaster, Schenectady.
J. Potter Harrington, Agent Saratoga Victory Mills, Victory Mills.
Charles Hayes, Jr., Skenandoa Cotton Co., Utica.
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William H. Merriman, Oswego.
Silas Rooney, Utica.
Harry F. Nuzum, New York.
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H. G. Kimball, New York.
T. F. Macgovern, Saratoga Springs.
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M. L. Matthews, Utica.
A. H. Tyler, New York.
Mrs. E. G. Waters, Schenectady.
M. F. Westover and Mrs. Westover, Schenectady.
Hon. James S. Whipple, Albany.
Mrs. W. B. Potter, Schenectady.
Edward Porritt, New York.
E. W. Rice, Jr., and Mrs. Rice, Schenectady.
Henry F. Mansfield, Utica (N. Y.) Steam Cotton Mills & Cotton Mills.
Nelson G. Stark, Oneida.
S. H. Steele, Textile Manufacturers' Journal, New York.
J. T. Stockdale and Mrs. Stockdale, Schenectady.
Mrs. C. W. Stone, Schenectady.
James W. Taylor, Agent Fuld & Hatch Knitting Co., Cohoes, N. Y.
Ramsay Peugnet, Secretary N. Y. Silk Conditioning Works, New York.
Howard W. Bible, New York.
Sidney Thompson Braman, Saratoga Springs.
W. S. Bullock.
W. J. Burnham, Saratoga Springs.
W. Sackett Duell, Klauber-Weldon Dyeing Machine Co., Amsterdam, N. Y.
W. L. R. Emmet, Schenectady.
G. E. Emmons, Schenectady.
Fred C. Freund, New York.
John B. Wild, President Oneita Knitting Mills, Utica, N. Y.
Rex G. Witherbee, Utica (N. Y.) Steam & Mohawk Valley Cotton Mills.
J. Irvine Lyle, General Manager Carrier Air Conditioning Co., New York.
Chas. F. Chase, Eastern Manager Cling-Surface Co., New York.
Vladimir F. Gnesin, New York.
James G. Merriman, Jr., Manager Standard Spinning Co., Oswego.
W. H. Currier, New York.
Mrs. W. H. Currier, New York.
C. A. Green, New York.
Mrs. J. W. Hain, Schenectady.
C. D. Haskins, Schenectady.
Mrs. William H. Merriman and Miss Merriman, Oswego.
C. M. Hoffschmidt, Schuckhardt & Schutte, New York.
F. H. Gale, General Electric Co., Schenectady.
Calvin S. May, M. D., Saratoga.
Albion K. Searls, Oneita Knitting Mills, Utica.
A. R. Bush, Schenectady.
Mrs. A. W. Jones, Schenectady.
Thomas H. Conley, Mohawk Valley Cotton Mills, Utica.
L. G. Johnson, Schenectady.
E. Howard Bennett, New York.

North Carolina:
Samuel F. Patterson, Treasurer Roanoke Mills Co., Roanoke Rapids.
Arthur J. Draper, Treasurer Hoskins Mills, Charlotte.
Stuart W. Cramer, Charlotte.

Pennsylvania:
Joseph Wasserman, President Philadelphia (Pa.) Tapestry Mills.
Wm. T. Westerman, Manager Ontario Spinning Co., Philadelphia.
Walter G. Miller and Mrs. Miller, Pittsburg.
Harry W. Butterworth, Secretary H. W. Butterworth & Sons, Philadelphia.
Edw. H. Sanborn, Vice President Cold Spring Bleaching & Finishing Works, Philadelphia.
Mrs. Harry W. Butterworth, Philadelphia.
Mrs. Robert Beatty, Philadelphia.
Charles Robbins, Pittsburg.
Thomas M. Baker, Philadelphia.
Robert Beatty, Philadelphia.

Rhode Island:
Arthur C. Freeman, Providence.
Albert H. Goff, D. Goff & Son, Pawtucket.
Edw. J. McGaughey, Secretary Home Bleach & Dye Works, Pawtucket.
G. H. Bridge, Jr., Providence.
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E. L. Merrow, Providence.
Albert F. Knight, Jr., Providence.
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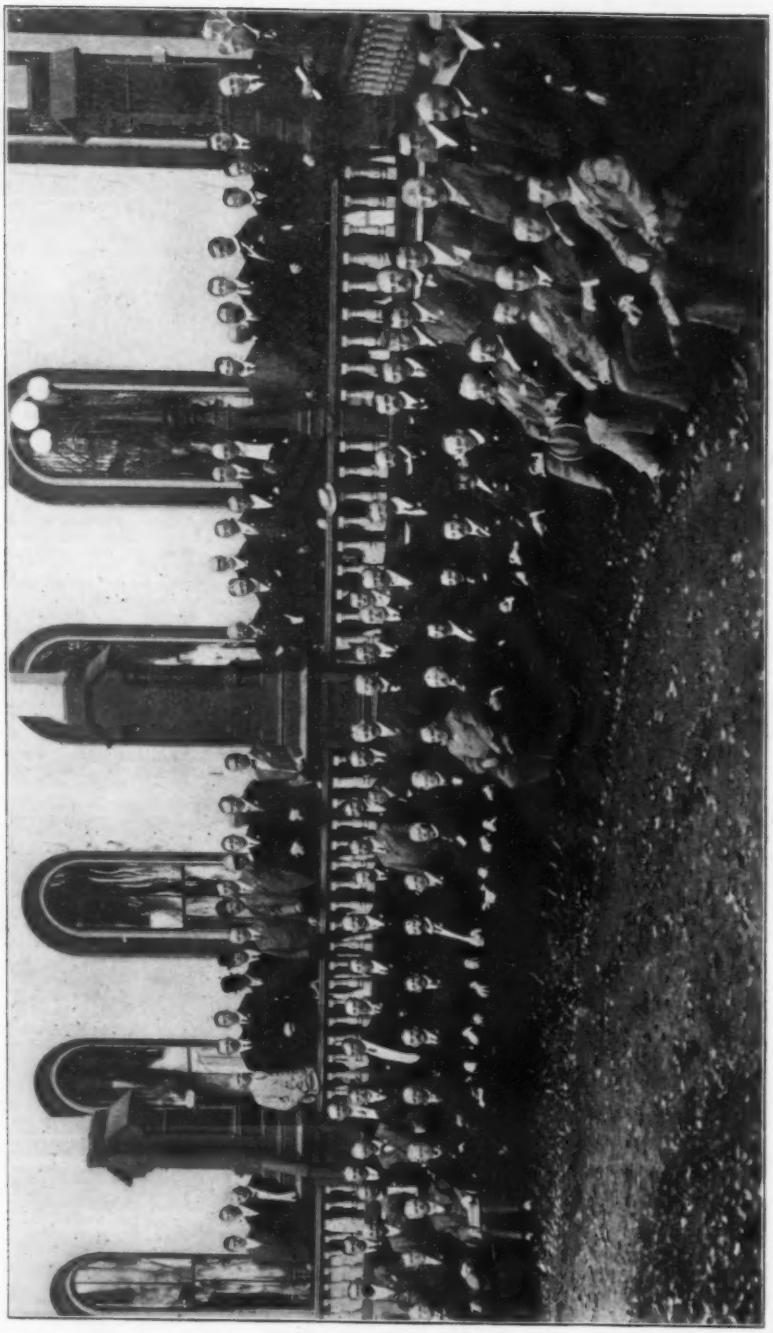
Albert H. Sawtell, Providence.
Henry Fisher, Providence.
A. L. Brown, Providence.
W. P. Thompson, Providence.
E. C. Smith, Central Falls.
Alexander S. West, Providence.
A. A. Aspinwall, Pawtucket.
Fred W. Easton, Treasurer Easton & Burnham Machine Co., Pawtucket.
L. W. Campbell, Agent Woonsocket (R. I.) Machine & Press Co.
H. Ernest Stafford, Providence.
Ezra Dixon, President Dixon Lubricating Saddle Co., Bristol.
John W. Mayo, Providence.
Fred M. Hoadley, Secretary R. I. Contract Engineering Co., Providence.
Frederic W. Howe, Manager Crompton & Knowles Loom Works, Providence.
E. R. Richardson, Assistant Treasurer Howard & Bullough American Machine Co., Ltd., Pawtucket.



A GROUP OF MEMBERS AND GUESTS AT SARATOGA CONVENTION.

The Meeting of the Textile Exhibitors' Association.

The annual meeting of this association was held on the second day of the Convention, and was called to order by George Otis Draper.

F. H. Bishop was elected Secretary, and made the statement that the Executive Committee favored an exhibition of textile machinery and supplies to be held in connection with the manufacturers' association's meeting in Boston in the spring of 1909. He expressed the hope that the American Cotton Manufacturers' Association and the Knitting Associations would also hold their meetings in Boston at the same time. He believed that the present organization would be the nucleus of a strong association among machinery builders and supply houses.

Mr. Draper made a short address, stating that the important thing at the present time is to provide ways and means for the preliminary work.

Several new members were admitted. The following officers were elected: President, George O. Draper; Vice President, F. H. Bishop; Executive Committee: H. W. Butterworth, M. H. Merrill, E. F. Hathaway, S. A. Corey.

The Executive Committee was authorized to prepare for an exhibition in Boston in April, 1909.

PAPERS READ AT THE CONVENTION.

The technical papers read at the different sessions follow:

The Fifth Congress of the International Federation of Master Cotton Spinners.

Held at Paris, June 1-4, 1908.

JAMES R. MacCOLL, Providence, R. I.

There is probably no branch of industry so thoroughly organized as the cotton spinning trade of Europe. Beginning with the local association in the town or neighborhood, followed by the National Federation, the organization is completed by the International Federation of Master Cotton Spinners' and Manufacturers' Associations, which now embraces all the European countries except Russia, and represents approximately 70,000,000 spindles out of a total of 90,000,000 spindles in Europe, and 120,000,000 spindles in the world.

The work and purposes of the National Federations vary in different countries. In England the matters dealt with include the following: Wages, labor disputes, fire insurance, parliamentary legislation, railroad rates, tax assessments, and curtailment of production. On the continent some of the federations also regulate output and prices.

The work of the International Federation has mainly had to do with the raw material. In 1904 when Sully pushed cotton up to seventeen cents and promulgated the theory that southern lands were worn out, and the cotton crop nearing its maximum, European spinners became alarmed at the danger of a cotton famine, and consequent wild speculation in the raw material.

Short time was resorted to by England, but it was felt that the co-operation of other countries was needed to meet the serious condition that had arisen. The International Federation was formed, and also the British and Continental Cotton Growing associations.

A great deal of substantial work for the benefit of the industry has been accomplished since their formation. Statistics are collected and published in March and September of cotton consumed in hands of spinners throughout Europe, and an investigation commission has visited the southern states, followed by a visit from 120 European spinners. With the cooperation of American manufacturers two conferences have been held with the growers. The worn out land theory has been exploded, and ample evidence secured that our southern states are capable of supplying all the cotton the world needs for centuries to come.

The growing of cotton in Egypt, India and the West Indies has received fresh stimulus, and considerable progress has been made in opening up new cotton lands in other countries. At the Paris meeting reports were submitted regarding the developments under the auspices of the British Cotton Growing Association, and resolutions were adopted, as at former congresses, expressing appreciation of what had been done, and urging the need for continued and persistent effort to increase the growth of cotton.

West Africa seems to be the most promising field. With the co-operation of the British government, new railroads are being built in two sections of the country, and much more rapid progress is predicted when these are completed. The following table shows what has been accomplished in the last few years.

Approximate estimate of cotton grown under the auspices of the British Cotton Growing Association:—

Year.	Bales.
1903	1,900
1904	5,500
1905	11,300
1906	17,300
1907	26,000

It is quite apparent that the supremacy of our southern states in cotton growing will not be seriously menaced for many years to come, while on the other hand it is probable that the day will come when West Africa may prove a formidable competitor.

In the opening address at the Paris Congress,

Monsieur Cruppi, Minister of Commerce and Industry, referred to the evil of speculation in the raw material, and expressed the interest of the French government and other governments in the work of the Federation in relation to curbing speculation, and promoting sound conditions in the cotton trade. In meeting prominent spinners and merchants of many nationalities, I was impressed with the fact that so many of them are firmly convinced that future trading in cotton is not essential, and believe that the business would be better without this system. If the cotton exchanges will realize that the purpose of their existence is not primarily to enrich their members, but to advance the welfare of the great industries of growing and spinning cotton, on which many millions of people depend for existence, personally, I believe that reforms can be brought about that will be better than abolition.

A committee of the New York Cotton Exchange is now facing this question. Let them provide a hedge that will be adequate and satisfactory, and deal in cotton that is usable by spinners, and the outcry against future trading will quickly subside.

An interesting feature of the Congress was the presentation to Mr. Charles W. Macara of an illuminated congratulatory address signed by representative men engaged in the cotton industry in many countries. It referred to the disinterested and valuable services rendered by Mr. Macara to the industry; to his leadership of the European delegates to the Atlanta Conference and through the Southern States in October, 1907, and to the International movement, in which he has been a most prominent figure.

There was a vigorous discussion of the question of over production and short time. The English spinners, having curtailed production, urged a similar policy upon the Continental spinners. The latter pointed out that business conditions were not the same in all the countries that they represented, and also the inconsistency of building so many new mills in England in recent years, and immediately thereafter having to run on short time. A resolution was finally adopted in favor of the principle that when there is a lack of the raw material, or the supply of manufactured goods exceeds the demand in any country, the adoption of short time working is the only real remedy, and should be in operation whenever it may be considered necessary.

It was apparent that organized short time was not believed in by all the delegates. Some thought that the old economic laws can best control such matters, and that when overproduction or shortage of raw material leads to unprofitable manufacturing, curtailment will naturally follow, and the "fittest will survive." There is a danger that an organized movement may shield too much the weaker concerns, and thus encourage mill building unduly when prosperity returns. The great weight of opinion, however, favored perfecting the International Organization, so that such emergencies could be dealt with, and their evil minimized. No organized curtailment, however, can be complete enough to prevent the lowering of prices to a cost basis or less when business depression comes, although the effect may be beneficial in a more quick return of prosperity when the tide turns.

Perhaps the most important action of the Congress was the adoption of the following resolution: "That this meeting, having heard the report of the Cotton Contract Commission, instructs said Commission to place before the European cotton exchanges a form of the C. I. F. contract on a net weight basis without franchise, and as soon as such form is accepted by the exchanges, strongly advises the trade to use this contract form for its C. I. F. purchases."

This section is the result of several years' preparatory work. It means that if cotton is bought on net weight, the inducement will be removed to cover cotton with heavy, coarse bagging that is unsuitable for the purpose, and adds to the expense of freight. Its general adoption by spinners throughout the world would hasten the day when a better American bale will be produced.

Mill fire insurance was one of the topics discussed. The mutual system recently adopted in England is likely to be extended to continental countries. In America we are fortunate in having a mutual system of fire insurance, which is remarkable for its efficiency and economy and is the best model for other nations to follow.

The sentiment of the Congress was favorable to the organization of an International Committee of Growers and Spinners, as proposed at the Atlanta Conference and action was taken tending to that end. It is believed that the influence of this committee would be to unite on a permanent basis the growers and spinners for mutual benefit and eventually to remove many of the abuses that now exist in connection with the handling of the raw material.

The attitude of the American Associations towards this International movement is now pretty clearly defined. It is cordial co-operation so far as consistent with American interests. The membership of the two large Associations on this side, the National and the American, is individual and not corporate. This prevents their joining the Federation, but apart from this technical obstacle, the American manufacturers can hardly be expected to be in complete accord with all the aims and purposes of the International Federation. We want to see our Southern States supply the cotton of the world and are not enthusiastic about the development of cotton fields in new countries. However, much manufacturing may be extended in this country in the future. There is no reason why any foreign spinners should not share with American spinners in securing the cotton that they need, if they are willing to pay an equally good price. Southern prosperity depends largely upon the cotton crop, and the great wealth that must come to the South in the future from this source will tend towards the increased prosperity of our whole country.

Disappointment was expressed at the meeting that the invitation extended to American spinners to send over a large delegation to attend the Paris Congress, and afterwards to visit the leading European centers of cotton manufacturing had not been found practicable to accept at the present time on account of the existing business conditions. Next year's Congress is to be held at Milan and in 1910 Brussels will probably be chosen. It may then be feasible for a large number of American manufacturers to attend and secure much benefit from an interchange of

views, and a study of trade conditions in foreign lands.

It is always an interesting experience to meet men of many nationalities, with varying characteristics and different ideals of life, but all engaged in a common industry. If all branches of trade were so organized, an important step would be taken towards the perpetual maintenance of peace and good will among the nations of the world.

Textile Fabrics and Their Consumers.

S. R. LATSHAW, The Curtis Publishing Company, New York City.

The late William E. Gladstone said that he was an extensive reader of American periodicals and particularly of their advertising pages, because in the development from year to year in the class of their advertising he could best trace the development of the American people.

A certain witty Frenchman held that Americans were possessed of a passion for irrigation, sanitation and education. These men in these two opinions forecasted the situation of today as they typified the condition twenty years ago. Yet neither, I venture to say, dreamed of the marvelous developments in these same characteristics. It is not necessary for me to point out the development in national education, except in so far as it concerns us both in its relation to the textile industry.

Patrick Henry wrote, "I know of no way of judging the future except by the past." Will you, therefore, join me in a very brief consideration of underlying tendencies and movements as affecting your business?

A few years ago Boston was the headquarters for the textile industry in this country. The New York houses received the duplicate letters of important communications. Today, New York is the textile center. A few years ago the New York jobbing interests were supreme. Today, their importance is rapidly waning, and most of you will agree with me that the western jobbers are the logical distributers of your fabrics in large quantities for the future.

Within a decade, jobbers in Chicago, St. Louis, Kansas City, Minneapolis, St. Joseph, Des Moines and other lesser centers of population have come up and are winning increased recognition. Each year the territory of the great old time jobbing houses is becoming more circumscribed and their power lessening as controlling factors in trade.

As the number of jobbers increase, they become more and more the distributers, and less and less the arbiters of trade. (This is a point that is worth thinking about.)

Within a comparatively recent time the cutting-up trade has assumed a marvelous development. The percentage of goods consumed thus in this country is of great and growing magnitude. The mechanical improvements in the manufacture of cotton, the improvements and refinements in design have kept pace with the generally apparent improvement in other lines of manufacture throughout the United States.

We have in this country no city that bears the relation to our country that London does to England or Paris to France. We go abroad for our styles, our fabric suggestions and for our models. Our manufacturers take over one-half of the entire output of the Rue de la Paix. The styles originating in the world centers of fashion modified to American tastes are sent throughout the entire United States. No matter how remote the trade centers may be, information is there as to what is the mode of the moment in wearing apparel.

This desire for accurate information and the wonderful opportunities that lie back of it has not been fully utilized by the cotton manufacturers. Today, and in the past, you have concentrated your attention upon the making of your fabrics; you have evolved a manufacturing perfection and scientific accuracy and economy to a position unique among great industries. But you have been blind to the value of exercising a paternal attitude toward your product after it leaves your hands. If you can secure good contracts for manufacturing, or if you are fortunate in having a commission house that disposes of your output on favorable terms, you feel that your work has been well done and fully done.

I maintain that this attitude on your part is not good business, and that it has been taken either without appreciating the great development on the part of the consuming public or that you have failed to analyze its importance to you. It must be clearly understood that I do not advocate the elimination of any of your present distributing factors.

I believe in the commission house, in the jobber and in the retailer. I do not advocate a revolution in your present channels of trade. I maintain that if your product is one of merit, if it is good value for the money, if you are not ashamed to put your name on it, business foresight demands that you should identify your product. No matter what your line may be, if that line is worthy, put your name on it and stand behind it. If you sell a case of goods today, it is because there is a demand for it—a demand from the consumers of America. If that fabric goes out unidentified the demand is uneducated and uninformed. The fact that people buy your goods today shows that they want material of that class, no matter what it may be. Instead of selling them goods of a class, why not sell them your goods?

Why is it that the purchaser today must buy in the dark from you? Why is it that you have lost the credit and the profit that should be yours from making honest fabrics? Why is it that a woman who buys a piece of your goods, and who is well pleased, has no way of knowing who the manufacturer is or of being sure of any way of getting that same fabric again? Why is it that your great firms have an enviable reputation extending only to the buyer of the retail merchants, and in many cases not even that far?

If you make good goods, to whom should the credit and profit belong? If your goods are unidentified today, to whom does "the woman who buys" accord the credit? Do you men feel that the great American buying public have a higher average intelligence than you have? Nearly every commodity that you buy for your own consumption is purchased by you because of your information and belief in the manufacture. You do not buy

unbranded hats, unbranded soaps, unbranded shoes, unbranded watches, guns, automobiles, or even unbranded collars or tooth brushes. No matter how great or small the article may be, you are influenced in its purchase largely because of what you know regarding its maker and his reputation.

A representative of one of your big mills came to me and said that he wished he could inform the consumer regarding his product, but that it did not seem feasible to him because he made a "bread and butter line." What is more staple than flour, and yet you can't think of flour without thinking of Gold Medal. What is more staple than house paint, and when I mention it you think of it by brand name. The woman buys her shoes, her gloves, her corsets, her tea, her coffee, her crackers, her canned goods and her meats by brand. The very fact that a line is staple, is in constant demand, and is of great and general consumption, makes it peculiarly adapted to modern methods of merchandising.

I have never talked with a manufacturer of a good product in my life that did not have confidence in his output. I have never talked to a manufacturer of a worthy product that did not enthuse me with his belief and his confidence in his goods. We have an enormous population, well informed, reading more per capita than any other nation, more eager for education, more eager to be shown what the market affords, more anxious to investigate than any people of any country on earth.

Dean Swift said that it took courage for the first man to eat an oyster. It does not require courage to eat an oyster today. To tell the buying public what you have to sell and why it is worthy of purchase does not involve any subtle and mysterious processes. Under normal conditions and with adequate preparation, it is no more a gamble than the most commonplace investments of every day business. The machinery for its accomplishment lies ready to your hand, and while, like everything else, it is being continually improved, the results are as certain as in other careful business investments.

In addressing you I am really talking to a few men.

Men make the successes in this field as they do in every other field. No publication, no agent, no outside force can make your success. They may be invaluable as assistants, but ultimate success lies in your hands and in none other.

The bulk of the textiles produced will remain unidentified, unexploited, unknown—selling well on a rising market and curtailed at a loss during every depression.

The bulk of the soap, the paint, the foodstuffs in this country are unknown and unexploited.

But in every business far-sighted men have recognized their opportunity, and have developed it until they have great organizations that not only make goods, but also control its ultimate sale, to their great profit and advantage.

Go into the coffee market and ask the brokers if Post is an important factor. They will laugh at you, and yet out in Battle Creek you will find mammoth plants that do a business of many millions each year and under the absolute control of this one man.

Some of you, a few of you, can control your product; some of you can build along these lines until you control your own output. You can see your product in constant demand in every city, village and hamlet of our own great country. A demand for your brand and name—a demand so steady, so constant, so persistent, and in such volume that the thousands of shop keepers would not dream of ignoring it.

And this demand will come up through the 8,000 department stores, the 30,000 dry goods stores and the 146,000 general stores until it culminates in the primary market. Not a general demand for goods of a class, but your demand, a demand for your goods, a demand you have created, a demand you control.

Positive and Accurate Humidity Control.

J. I. LYLE and W. H. CARRIER, 39 Cortland St., New York City

It has long been appreciated that a uniform and a fairly high degree of humidity is desired in most textile processes. Many of the more careful and successful managements have given the subject considerable study and have taken much pains to control conditions to a uniform standard, as nearly as possible by hand and within the limitations of the means of humidifying employed. Even the most painstaking hand regulation has not proved entirely satisfactory, and though doubtless profitable, it has been expensive, because it necessarily engages much of the time of the foreman or superintendent which could have been spent elsewhere with advantage.

It is believed that a simple and positive system of automatic humidity control will pay for itself in a very short time, not only on account of the labor it saves, but more particularly on account of the ability to maintain uniformly any desired percentage of humidity. In many places, as for instance, in the card room or speeder room, while it is desirable to maintain as high a percentage of humidity as possible, an excessive humidity gives instant trouble. With hand regulation it is not wise to approach very near the danger line. With an accurate automatic humidity control, the humidity conditions may be held at any point desired without the slightest danger of exceeding a pre-determined limit.

Before considering in detail the means for automatic controlling humidity conditions, it may be well to consider briefly various elements effecting the percentage of humidity.

The relative humidity of the room is effected,—

1. By a variable weight of water vapor in outside air.

2. By the variable temperature of the room, which is dependent upon the outside temperature, the heating system, the great amount of heat from the machinery and from sunlight. This heat is disposed of by radiation, ventilation and evaporation.

3. By the variable amount of ventilation required to dispose of heat in the room in summer.

4. By the weight of water vapor added mechanically to the air in the room.

It is readily seen that the problem of humidify-

ing and of controlling the relative humidity with precision under all conditions, is not at all a simple one. To be entirely successful any system of humidifying and the humidity control must possess five essential elements.

1. The humidifying system must be very flexible in capacity and its ultimate capacity must be ample for the most extreme conditions.

2. The temperature should be controlled together with the humidity so far as is practical. Therefore the heating system, regardless of type, must be considered as forming a part of the humidifying system, so the whole can maintain both a constant temperature and a constant relative humidity in cold weather.

In warm weather it is necessary to provide a means to dispose of the immense amount of heat from the machinery in order to cool the mill and prevent undue rise of temperature. This is generally done by ventilation. So it is desirable that the amount of ventilation, whether natural or mechanical, should be considered a part of the humidifying system and be under the controlling system.

3. The automatic control must be capable of maintaining desirable percentages of humidity over a range of room temperature of 25°, as it is frequently impracticable in warm weather to maintain room temperature much below the outside temperature. It should also be possible to secure any desired variation in humidity at different temperatures as well as a constant relative humidity, for instance, in order to secure a constant percentage of regain.

4. It is desirable that means be provided so that the per cent. of relative humidity or per cent. of regain may be varied readily by the operator.

5. It is necessary that the regulator shall respond with exceeding rapidity to any sudden change in humidity, and it is preferable that the control be graduated so that the humidification shall be in constant operation but variable in quantity as conditions may demand.

The relative humidity of the air in the room may be increased mechanically in several ways:

1. By the introduction of steam into the room, either directly or through air ducts.

2. By spraying hot or cold water into the room, either directly or entrained in air currents.

3. By blowing saturated air into the room free from entrained moisture.

4. By simply lowering the temperature of the room without the introduction of moisture, except in a few special cases.

The first means of humidifying is not practicable as it does not provide for cooling in summer, which is essential. The fourth means is usually only practicable as combined indirectly with the second and third. Every system moreover must take care of the incoming air, whether introduced intentionally or unavoidably, and necessarily variable in quantity.

The second system of humidifying can be controlled only through the relation of the wet and dry bulb temperature, while the third system of humidifying is a positive control from the relation of the dew point to the room temperature.

Both methods of regulation have been perfected and fortunately for textile manufacturing basic patents have been secured

I say fortunately the patents have been secured for the reason that it seems to be necessary for the introduction of any invention, whether patented or not, that it should have some one to push it, and the "pushing" of a device of this character can be made profitable only by means of protection.

Humidity may be controlled through the same principle by which it is observed, viz:

1. Hygroscopic properties of some vegetable or animal substance such as wood, hair, silk, etc.

2. The relation of wet and dry bulb temperatures in the room.

3. Relation of the dew point to the room temperature.

The first method has never proved successful for either indicating or controlling humidity, chiefly on account of the time element necessary for the material to absorb or give off moisture thus giving a lagging effect which is not usually quick enough to give practical and accurate control. Then the hygroscopic properties of a material do not remain constant, but the power of absorbing or giving of moisture diminishes gradually although very slowly with some substances. The two latter methods alone are positive and practical. Which one of these methods of control is to be used, as well as the method of its application depend largely upon the system of air conditioning used.

Let us consider the control of the third method of humidifying, namely, the blowing of saturated air into the rooms free from entrained moisture, and before describing the details of the methods, let us consider the natural laws involved.

It is necessary to understand the relation between the dew point or temperature at saturation to the dry bulb temperature in order to understand the methods of control described as later. This relation can be best illustrated by the following tables:

1. Grains of water vapor per cubic foot when saturated at several temperatures.

Degrees.	Grains.
63	6.35
68	7.48
73	8.78
78½	10.11
82½	11.80

As the air is saturated, the temperatures given are the dew points for the various amounts of moisture. It is well to bear in mind that any given number of grains of moisture per cubic foot has a fixed and definite dew point or temperature of saturation.

2. Grains of water vapor per cubic foot held by air at 80 per cent. relative humidity at several temperatures.

Degrees.	Grains.
70	6.38
75	7.49
80	8.74
85	10.19
90	11.83

Now kindly compare the weights given for the first temperature in each table. We find that air 80 per cent. saturated at 70° holds 6.38 grains per cubic foot and that air at a dew point 7° lower, or 63°, holds 6.35 grains, or practically the same amount.

By comparing the others in succession it will be found that air at 80 per cent. of saturation holds the same amount of moisture per cubic foot as air approximately 7° lower in temperature but completely saturated.

It could similarly be shown that air 70 per cent. of saturation contains the same weight of water vapor as air fully saturated 11 1/4° lower. In other words, the dew point depression below the dry bulb temperature for the different percentages of humidity is as follows:

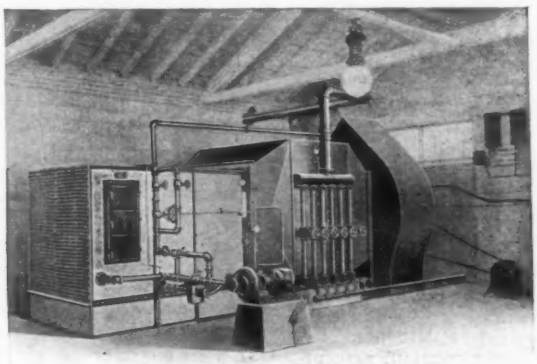
Approx. per cent.	Degrees.
80	7
75	9
70	11¼
65	13¼
60	16¼
55	19

From this can be seen, that if the difference between the dry bulb temperature and the dew point temperature remains almost constant, then the relative humidity will be practically constant even though the temperature may vary over quite a range.

Therefore, for relative humidity control, it matters not what the dry bulb temperature is nor the temperature of the dew point, but it depends upon the difference between the two.

The dew point system of control is of particular interest since it is ideally adapted to a system of air conditioning possessing many advantages.

This system, which has been recently developed and perfected, depends upon its humidifying effect upon the introduction of properly conditioned air into the room. The accompanying cut shows the general plan of such an installation. The air to be conditioned is first drawn by means of a fan entirely from out of doors and is then saturated at a temperature bearing some pre-determined relation of the room temperature. The air thus saturated is freed from all entrained moisture by passing through an especially constructed eliminator or separator and then discharged into the room, either directly, as in summer, where cooling is desired, or in winter by first passing over heating coils where sufficient heat is imparted to it to maintain the desired temperature in the room. As there is no moisture removed from the air in passing through the heater and as the air introduced into the room largely prevents any leakage of outside air inwardly the room will contain practically as many grains of moisture per cubic foot as the air at the apparatus.



CARRIER SYSTEM FOR CONDITIONING THE AIR BEFORE IT ENTERS MILL.

With a definite room temperature, a fixed number of grains of moisture per cubic foot will be required in the air being furnished to the room to give it a definite percentage of humidity; which means saturating the air at a definite and fixed dew point temperature.

If the temperature of the room were to be maintained absolutely constant, winter and summer, the method of controlling the conditions of the air to give a fixed percentage of humidity would be exceedingly simple and it would be only necessary to maintain a corresponding fixed temperature of saturated air leaving the apparatus.

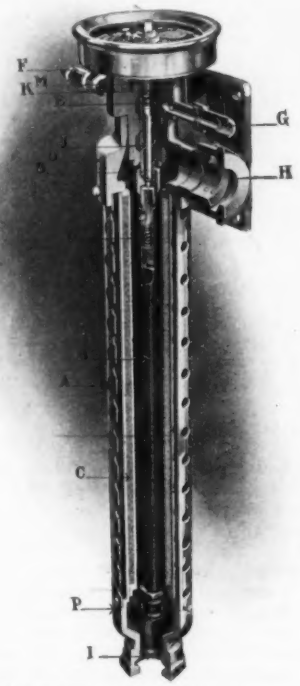
In nearly all cases, however, it is impossible to maintain the same temperature in summer and winter since cooling by refrigeration is out of the question. The only cooling effect available is that due to evaporation and ventilation which depends primarily upon the dryness of the outdoor air. In such cases the amount of moisture to be introduced into the air at the humidifier must always correspond to the room temperature. Consequently the temperature of the saturated air must vary, as the room temperature varies. Fortunately it is possible to take care of this, owing to the relationship of the dew point temperature to the room temperature.

By reference to above table, it is seen that for a fixed percentage of humidity, the difference between the room temperature and the dew point or saturated air temperature at the apparatus is practically constant for any given percentage of humid-

ity. Knowing this relationship exists, it will be quite possible for an attendant to control the temperature of saturated air leaving the humidifier, so as to always maintain this fixed relationship. This would require him to change the temperature at the apparatus for any change in room temperature, which would demand constant attention.

The construction of the humidifier is such that the air is always saturated regardless of its temperature or humidity conditions upon entering and also regardless of the water temperature used in spraying. Provided of course the water is above the dew point temperature. Two simple and satisfactory methods are employed to raise the temperature of the saturated air and increase its moisture contents.

The first method consists of heating the spray



DIFFERENTIAL THERMOSTAT.

water by means of a steam ejector. This is ordinarily used only in winter.

Second, an increased proportion of air from the room is returned. This method is usually employed in summer, when a small rise in temperature is sufficient and it possesses the advantage of securing the same results without the use of steam. These two methods of increasing the humidity may be used either separately or conjointly. In all cases, however, it will be noticed that saturated air is introduced several degrees below the room temperature so that a great amount of cooling effect is available for such conditions.

Instead of securing the above relationship between the temperature of the room and the temperature of the saturated air by hand control, which would be impracticable, these results may be secured automatically by simply replacing the ordinary thermostat controlling the temperature of saturated air by a differential thermostat.

The arrangement of this differential thermostat is clearly shown in the accompanying cut. It consists essentially of two concentric A and B tubes made of high expansion metal. These tubes are rigidly fastened together at one end and the inner tube, B, is separated from the outer tube, A, by a third insulating tube or shield, which permits the two tubes to be exposed to currents of air at different temperatures. This insulating tube, C, also serves as a conductor for the air which is drawn from the room through properly insulated pipe by the suction of the fan. The inner tube is then in a vigorous air current at room temperatures, while the outer tube, which projects into the air duct leading from the humidifier, is subjected to the temperature of the saturated air at the apparatus. These two tubes expand in opposite directions in obedience to temperature changes and if they have exactly the same length and same coefficient of expansion, it will be readily seen that the point at the end of the inner tube will not move, so long as the temperature difference between the inner tube and the outer tube remains constant regardless of the expansion or contraction of each tube separately. If, however, the difference in temperature changes, there will be a difference in the expansion of the two tubes and point D at the end of the inner tube will shift. This movement, though slight, is powerful and positive and by utilizing it to actuate a small compressed valve, J, the air pressure in two diaphragms can be readily controlled. One of these diaphragms opens and closes the steam supply to the ejector which heats the spray water. The other diaphragm operates a damper which controls the proportion of air returned from the building and mixed with the fresh air before entering the humidifier. If the temperature of the saturated air at the apparatus falls below the room temperature, then the point D moves to the right and a portion of the air pressure is removed from the diaphragm valve and from the damper diaphragm so that more steam is admitted to heat the water and a greater percentage of air is returned from the building, both of which tend to raise the temperature of the saturated air to a point where equilibrium is reached. On the other hand, if the temperature of the saturated air becomes too high, the point D recedes and actuating the compressed air valve increases the air pressure on the valve diaphragm and on the damper diaphragm. This increase in air pressure on the valve diaphragm shuts off a portion of the steam of the water heater, while the increased pressure on the damper diaphragm admits a greater proportion of outside air. In this manner it is possible to regulate automatically the condition of the air so that it shall be introduced into the room with just the proper number of grains of moisture per cubic foot to give right percentage of humidity regardless of variation in room temperature. Thus if the control is for 70 per cent. humidity, it will put exactly 5.6 grains of moisture into each cubic foot of air introduced, when the temperature of the room is 70°. If the temperature of the room is 80°, it will introduce exactly 7.65 grains of moisture per cubic

foot and when the room is at 90°, it will introduce 10.35 grains per cubic foot and so on for intermediate temperatures and for other percentages of humidity.

Rooms conditioned in this manner exhibit a remarkably uniform condition of humidity throughout, owing to the fact that each cubic foot of air in the room and each cubic foot of air introduced into the room contain exactly the same number of grains of moisture per cubic foot. Further than this, the plenum produced by the constant introduction of a certain proportion of fresh air effectually prevents infiltration of dry air.

Let us consider now the control of the first and second methods of humidifying systems, namely, those which introduce steam or water spray direct into the room. In such cases a control is required, which is dependent upon the relationship between wet and dry bulb temperatures.

Now by using a slightly modified form of the differential thermostat, which we call a differential hygrostat, we can procure a control between by using the dry and wet bulb temperature instead of the dry bulb and dew points as in the previous case.

The construction of the Differential Hygrostat is shown by the cut and consist essentially of two concentric tubes.

This movement though slight is automatic and by utilizing it to actuate a small compressed air valve the air pressure in a diaphragm can be readily controlled. The diaphragm opens and closes a valve controlling the spray water or steam which is being injected into the room.

Both elements are not made of the same material. The outer element is made of ordinary expansion metal and is subjected to the room temperature, while the inner tube is made of a material having a higher ratio of expansion and so proportioned that the relative expansion of the two elements will be inversely proportioned to the ratio of wet bulb temperature rise to the dry bulb temperature rise for the required percentage of humidity. Any change in the pre-determined relationship of wet bulb temperature to dry bulb temperature will instantly operate the thermostatic valve, which in turn will actuate the valve controlling the water supply of the humidifying heads, or may be made to actuate the valve controlling the steam heater for the spray water.

The most satisfactory arrangement is to operate these two valves on a relay so that the cold water pressure would be thrown on the heads before any steam is used and so the steam would be shut off from the water heater before the valve was closed on the heads. Such an arrangement will give very good control.

It will be noted that the inner tube of the differential hygrostat must be subjected to the wet bulb temperature. This may be accomplished in two ways, first by covering the inner tube with a wetted wicking and drawing a strong current of air over it by means of a mixture-exhaust fan. An alternative and preferable way is to induce a current of saturated room air by means of a small centrifugal spray nozzle used to inspirate and at the same time saturate the current of air which has passed through the inner insulated tube and over the inner thermostatic element. This gives exactly the wet bulb temperature required and there is no wicking to bother with or give trouble. The water pressure required to operate the nozzle is produced by a miniature belt driven plunger pump, so that the water is used over and over. This water will be at practically the wet bulb temperature. The water used by evaporation and entertainment is replenished by a water tank in the manner shown, so there is always a constant supply of water for the pump.

What is Plain Cloth? What is a Plain Weave?

A. M. GOODALE, Boston Mass.

Some time ago President Plunkett appointed a committee to prepare "standard specifications for plain cloth." At the first meeting of the committee the question arose: What is plain cloth? The writer was appointed to bring in a definition of plain cloth, and at the next meeting of the committee made the following report:

"The scope of the committee's work as defined in letters of appointment is as follows: 'to prepare standard specifications for plain cloth to be submitted at the fall meeting of the Association.'

"When the work of the committee specified as above was outlined, it is entirely possible that the difficulties in the way of obtaining an acceptable definition of plain cloth were not realized. Definitions from about twenty prominent manufacturers, converters and designers have been received, and the one point in which they nearly all agree, gives such a very narrow definition that it would be hardly worth the while of the committee to confine itself to preparing specifications for cloth as thus defined.

"Having given the matter personally a good deal of thought, it seems to me that it would be much easier to change the resolution stating the scope of the committee's work, than it would be to reconcile in a way that would be generally accepted, the varying definitions and ideas regarding plain cloth.

"I would suggest that we ask to have the scope of the committee's work changed from 'preparing standard specifications for plain cloths,' to 'preparing standard specifications for staple grey goods.' This at once removes any question as to what might or might not constitute a plain cloth, and enlarges the work of the committee to cover ground that should be covered. It eliminates colored and fancy goods, so called, and includes print cloths, odd goods. sateens, twills, ducks, lawns, etc."

This report was accepted and adopted, and it satisfactorily side-stepped, so far as the committee was concerned, the question of what constitutes plain cloth and incidentally a plain weave.

The question, however, remains and is of more or less interest in itself.

Off-hand, nothing would seem much easier than to define a plain cloth, and a plain weave seems equally simple; but as one thinks it over, certain difficulties arise which are not easily disposed of. After the writer had spent the greater part of one evening in trying to formulate a definition that suited him, he was reminded of the rules in the German grammar which he used to try to learn, where the rule consisted of one line at the top of

the page, and the exceptions to the rule took up the balance of the page.

The writer has the pleasure of a very large acquaintance among manufacturers, and when the question of a satisfactory definition assumed such difficult proportions, he decided to write to about thirty men, the list to include treasurers, agents, designers and converters. The following letter was sent:

"The National Association of Cotton Manufacturers has appointed a committee 'to prepare standard specifications for plain cloth to be submitted at the fall meeting of the Association.'

"The committee finds more or less diversity of opinion as to what plain cloth is, and as to what varieties of plain cloth are made by a plain weave.

"The writer has to prepare the definition of both plain cloth and plain weave, and if you would help him by writing to him your own opinion as to what is meant by plain cloth and by plain weave, you would confer a favor. Yours very truly,

"A. M. Goodale."

The answers to this letter are extremely interesting. No one will wonder that after reading these letters the committee diplomatically and gracefully side-stepped this question and substituted "staple grey goods" for "plain cloth."

"Replying to yours of the 23d inst., which I find on my desk on my return from a short vacation, I would say, that I consider plain cloth a two harness weave only.

"A three harness weave would be called a twill, so would a four harness, and from there up you keep going until you get a five harness satine and fancy weaves thereafter, but there is only one definition for plain cloth or plain weave and that is a two harness weave."

"Your favor 24th inst. In our line of business we consider a plain cloth or plain weave one thread up and one thread down, every other thread."

"Replying further to your letter of July 24th, in reference to my definition of plain cloth, and plain weave, my understanding of both these terms is, that they both refer to cloth woven on a plain two harness loom without Jacquard, Dobby, or Lappett attachments, one up and one down, that is where every filling thread alternately goes under and over the warp threads, and where vice versa, every warp thread goes alternately over and under the filling threads, every thread both warp and filling being woven in singly.

"You will from this see that in my understanding of plain cloth, I do not include any goods such as twills, etc."

"In reply to yours of the 22d, I understand that all plain cloth must be a plain weave, but that every plain weave is not plain cloth, as for instance a piece of plain weave might have twenty threads in the warp of No. 70s yarn, the next twenty of No. 10s yarn and so on, thus forming a stripe, or it might have simply one thread of very heavy yarn on a ground work of light yarn, the weave still being plain, forming a cord, neither of which would be plain cloth, or in a plain weave, colored yarns might be introduced, in which case the fabric would no longer be plain cloth, or in a plain weave the warp might be made of No. 100s and the filling say of No. 10s forming a ribbed or poplin effect, which would not be plain cloth.

"I presume the books on weaving contain proper descriptions of a plain weave. I have not had time to look them up, but assuming that people would generally be agreed upon the above description of plain cloth, I offer the following:

"A plain weave is one in which each thread of the warp alternately goes under and over each thread of the filling.

"Plain cloth is cloth made in a plain weave in which all of both the warp and filling threads, except the selvage, are made of one number of grey yarn, but not necessarily the same number, and in which in case different numbers are used the difference is not so great as to produce a noticeable effect."

"My idea in regard to a plain weave is any cloth whatever that is woven with two harness, one up and one down. I have always considered a plain cloth was a cloth with two harnesses one up and one down either in the grey or in the bleached, such as long cloth, cambrics, muslins, sheetings or shirtings, or any cloth of this nature. I consider that a plain weave, but not a plain cloth, and could be called a fancy cloth, would be such a cloth as a chambray or a plain gingham or stripe, where the weave was two harness, one up and one down. I discussed the matter thoroughly with my friend, and he says that a plain weave and a plain cloth is identical. That any cloth whatever woven with two harness, one up and one down, irrespective of whether it is in the grey, bleached, got colors in it or not, is a plain cloth, and that the term plain cloth covers anything that has a plain weave, namely, one up and one down, two harness. I begged to take issue with him, but he seemed to think that I was in the wrong."

"I should think the definition of 'plain cloth' might be broad enough to include not only so-called distinctively plain weaves but a cloth of any color that has a smooth, flat weave and has no ornamentation on the face, either woven or printed. I think in trade this definition would obtain.

"'Plain weave,' I should suppose would have to be confined to a 1/1 weave, half of the warp is raised for one shed and the other half for the next shed. I can well understand that technically, or pushed to the last analysis, there might be some variations, but the above is as I should understand a 'plain weave' or a 'plain cloth.'"

"Replying to your favor of July 22d regarding the definitions of plain cloth and plain weave, we consider the two terms practically synonymous and should define them as the alternate interlacing of ends and picks in both warp and filling. The warp and filling must each be of the same fiber and size of yarn throughout, also count the same per inch or fraction thereof throughout the width and length of the cloth, but the warp and filling need

not necessarily be the same in fiber, count or construction.

"We do not consider that certain ducks (2 ends as 1) nor repps (2 picks as 1) are plain cloths. The only distinction we can see between the two terms is where colored yarn effects are used on a plain weave, checks or stripes for example, and on this point, we are not well enough posted to give our opinion."

"Your letter of July 24th duly received and has had careful attention. I would describe 'plain cloth' to be that woven of the simplest possible construction, i. e., '1 up and 1 down' and unbleached, not dyed, printed or ornamented in any way.

"I would designate a 'plain weave' as any two harness work or four harness work 'drawn skip shaft' 2 up and 2 down, using any style of yarn."

"Your letter of the 22d received and noted. I do not know as I have had the question put in just this way before, however, will submit the following.

"A perfect plain cloth is one in which the sley and pick are equal, with warp or filling of the same size or count and of a size or count in relation to the sley and pick to give the proper angle or curvature to the threads.

"A cloth continues to be a plain cloth wherever the warp and filling intersect alternately until there is such a preponderance of one (warp or filling) over the other, that the cloth is given a distinctive characteristic peculiar to its own construction. All cloths made by the alternate intersection of the warp and filling are plain weaves.

"If these are too far from your ideas of this, should be glad to have your criticism."

"Yours of the 23d. Taking the question as it stands in quotation marks in your letter, I certainly would not know how to answer it. I should say in a general way it would mean any goods that were woven on a plain loom, but as you know, there are hundreds of varieties of goods of this kind. The yarns might run as low as No. 10 and as high as No. 120 and there might be peculiar combinations of very fine filling and very coarse warp or vice versa, and still come within the description of plain cloth; and I do not see how a specification can be prepared for such cloths that could be called a 'standard.'

"It seems that the purchaser determines the specifications largely. I do not think the question as quoted in your letter is very intelligent, unless there are some qualifications which you have not stated."

"Yours of the 22d at hand. My idea of plain cloth, or a plain weave, is a fabric that can be woven with two harnesses and one shuttle and contains grey yarns."

"Under date of July 22d, you asked my opinion as to what is meant by plain cloth and plain weave.

"It would seem to me that this would be simply two-harness work ordinarily, but I suppose there are ways by which the warp threads can be drawn on two harness work so that the cloth is neither plain cloth nor the weaving plain weaving."

"I should say that 'plain cloth' is a cloth without ornamentation of any kind with a warp of uniform number of yarn and a filling of uniform number of yarn, woven in perfectly regular count having neither cords inserted nor fancy stripes in weave or check and without color in either warp or filling.

" 'Plain Weaving.' The result of plain weaving must be plain cloth except that yarn in colors making stripes, chambrays and a few corded goods not requiring two or more beams in the weaving may be made in plain weave. Result of plain weaving may be obtained from looms equipped with fancy motions.

"I have not thought this over very much but should think the above would cover the conditions."

"I have always considered plain weave to be a weave with two harnesses plain drawn. Goods with a stripe would be a plain weave, but not plain cloth.

"Plain cloth is two harness weave, with the warp all one number and the filling all one number, to get the desired weight and pick."

"By a plain weave, I mean a cloth with pick and pick weave and uniform. By plain cloth, a cloth with this weave and with the warp and filling near enough in size so that neither of them is prominent to the eye over the other. Commercially, I understand that any cloths that can be woven on plain looms with no more attention from the weaver than plain cloth, would for simplicity be classed with plain cloth. This would include twills and sateens up to five harnesses.

"How does this agree with your ideas?"

"In our work, it is customary to classify plain cloth entirely on a two harness weave, thus twills and sateens would not come under the head of a plain cloth, nor would any style requiring a dobby.

"We presume, however, that the intention of the National Association of Cotton Manufacturers was to cover a considerably wider range of cloth than would be included under the above classification. Should think it might apply to any cloth not requiring a dobby."

"Your letter of the 22d received asking the writer's opinion of what is meant by plain cloth and plain weave. I should say that a piece of cloth made with the ordinary selvage or tape selvage where the filling is about the same number as the warp with single yarn, or finer, would be defined as a plain weave. I do not consider that where the filling is coarser like a soiesette construction or a repp that it is a plain cloth or any cloth that requires a dobby selvage. While a poplin, soiesette, mull and repp are woven on a plain loom it does not seem to me as though they should be classed as plain cloth.

"When a buyer asks for a quotation giving the width, count and weight, I would not consider

that the cloth filled the bill if the weight was produced by putting in heavy filling with fine warp, although the constructions usually asked for are a guide to this. We sometimes put a two ply selvage on a cloth in order to make it run well; but if the plain cloth is asked for, I would not consider that the buyer had a right to demand this, or reject the cloth if it was omitted."

In all twenty-seven answers were received, and after threshing them all out, the writer with much diffidence offers the following definitions:

A plain weave uses two harnesses, each harness carrying one-half of the warp threads drawn in uniformly and alternately, and each thread of the warp alternately goes over and under each thread of the filling.

Note.—Any number, any kind of yarn may be used either in warp or filling.

Plain cloth is cloth made in a plain weave of grey yarn (i. e., not colored), in which all of the warp threads, except the selvage, are made of one number of yarn, drawn uniformly one or two ends in one dent through reed and with practically uniform tension, and in which the filling threads are one number of yarn.

The numbers of the warp and filling need not be the same, but when different numbers are used, the difference must not be so great as to produce a noticeable effect in the cloth, and both the warp and filling threads must have approximately standard twists.

These definitions may or may not be right, but they attempt to cover every point that has arisen in the correspondence, and the writer hopes that they will be thoroughly discussed at the present meeting, and if they can be made better by any addition or subtraction, or by a change in phrasing, he will be most glad.

The great divergence of opinion in the correspondence shows forcibly the need of definition that shall be comprehensive, complete, and standard.

Some paragraphs of the tariff act of 1897, together with decisions by the General Appraiser at New York follow:

Twilled Burlaps.—Burlaps of single jute yarns, woven in such manner to present a twilled effect running diagonally across the cloth, are dutiable as manufactures of vegetable fiber at 45 per cent. ad valorem, under paragraph 347, tariff act of 1897, and not as "plain woven fabrics of single jute yarns" at the compound rates imposed by paragraph 341.

"Plain Woven" defined.—The term "plain woven" in said paragraph 341 means plain as distinguished from twilled or figured effects produced in the process of weaving.

Jute Cloth not made of Single Yarns.—A plain woven cloth composed of jute yarns advanced beyond the condition of singles by grouping or twisting three or more single yarns together is excluded from paragraphs 341 and 344 of said act by the clauses limiting their application to goods composed of "single jute yarn" or "single yarns made of jute." Paragraph 347 supplies the proper classification.

Reflections Upon Color and Dyeing Appliances, as Related to Special and General Progress.

JOHN H. GILES, Amsterdam, N. Y.

It should be regarded as not the least important or attractive feature of The National Association of Cotton Manufacturers, that while its meetings and proceedings emphasize information and discussion of matters specially pertinent to the cotton industry, it professedly countenances and invites whatever makes for "the promotion of social intercourse among its members," that it regards with a similar interest and complacency its commercial and its aesthetic aspects, and affects at once the business and the bosom of affairs. Obviously it does not intend to discredit a business man for being in love with his business, or at least seeing the brighter and more artistic side of it; on the contrary, it would assume as the consensus of practical minds that if he has not some enthusiasm for his business he would better be out of it.

Such an association—of at least quasi scientists, who have often known of the grub's emergence into the chrysalis and the butterfly, should hardly be disconcerned if, in the present instance, a rubric of dyes and dyeing machines should shade upwards among curiosities of the philosophy of color, and forth into cheerful amenities of the progress of the race.

For color is the oldest charm in the world, and the art of it attests itself as earliest in the lives and the letters of every people. In the story of the luxury of Dives it is not so much that he fared sumptuously every day, but primarily that he sat down in purple and fine linen. In the farewell, Disconsolate Eve, as she looked back to the closing gates of her lost Eden, it was not so much for the tree of knowledge, nor for the luscious fruits, nor for the company of the friendly and harmless creatures that she grieved,—she sighed for the colors that were fading from her view:

"And must I leave thee, Paradise. . . . O flowers
That never will in other climate grow."

The antiquity of dyeing is itself impressive. Mankind equally in the rudest and most refined state have always shown a love of distinction—which Mr. Darwin thoroughly identified in birds and animals as well—both men and women delighting to stain with gaudy colors not only their garments (whether woven stuffs or animal skins), but also their bodies, especially on the face, breast and arms. "See Me," seems to have been the first aspiration of conscious life. Moses speaks of the dyed garments of his time, and enjoins purple stuffs for the tabernacle, and for the raiment of the priests. Purple garments were among the spoils of the Midians. Homer dwells no less on the value than the antiquity of the purple dye, and distinguishes his heroes by their colored robes. The races of the ancient stadium had their special colors, even as have those of today; and the dames of Rome waved their "gilded hair" at the triumph of the victors.

Calico printing, which takes its name from Calicut, a district of India, was known and practiced many centuries in Asia Minor and the Levant, before it was introduced to England in 1696 by a Frenchman who was a refugee from his own country. Previous to his time the printed cotton chintzes from India had occasioned the fiercest jealousy on the part of the English silk and woolen weavers, and the prints had by act of Parliament in 1700 been excluded from the country; for in 1680 the woolen weavers had mobbed the India House on account of its vast importations of the cotton cloth. Indeed, so fierce was this enmity to the cotton prints that so late as 1720 Parliament passed a sumptuary law prohibiting the wearing of all printed calicoes whatsoever, "whether of foreign or domestic origin," except upon payment of a duty of six pence per square yard. This oppressive statute remained in operation for ten years, when in 1730 it was mitigated to the extent of allowing a cotton filling in a linen warp of even this mixture, which was called "British Cotton," no more than 50,000 pieces had been made in one year up to 1750. But in 1774 the law of 1730 (calling for the linen warp) was repealed, and the printer was allowed a homogeneous web; but still the "hated-cotton" was mulcted with a duty to the home government of three pence per square yard. Even under this handicap the cotton-weaving industry so prospered and extended as to yield a revenue of £2,280,000 in the year 1831, at which date the English duty upon printed cotton was entirely thrown off.

However science may have increased the brilliancy and variety of modern dyes, the charm and prestige of color linger with the purple of the East, called sometimes the Tyrian purple, on account of its manufacture having been the principal industry of Tyre, and sometimes the Royal purple, because of its being so expensive that in Tyre only the kings, and in Rome only the emperors could wear it. As the question of endurance is involved, we can hardly assume that our purples and scarlets are finer than the Tyrian could have been, but the interest which the ancients displayed in the purple is no less an interest to us, it having been, in all the East, the symbol of luxurious estate.

This purple seems to have been very durable; for Plutarch records in his life of Alexander that the Greeks found in the treasury of the King of Persia purple cloth to the value of 5,000 talents (nearly $6,000,000), which had lain there 190 years, and was as bright and beautiful as ever.

Although the Tyrian art is lost, we have to claim of course "something just as good;" but it is to be observed that the art of dyeing has grown rather empirically than theoretically; its progress has come not from books or speculations, but from the practice of hard and busy hands, and, as in the steel industries, often descended from the father to the son. Indeed, what dyeing does, or means, is still a problem with "the learned." Whether its effects are chemical or mechanical is still in dispute. Black sand and white will make a gray, and yellow sand and blue will make a green, and every particle of sand, like the Boston baked bean, will retain its egoity, its identical selfhood, under the most crucial trituration; but whether any colored matters, being mixed, retain original elements of color, is a topic which Sir Isaac Newton and Mr. Delaval of England, and Messrs. Dufay, Bergman, Berthollet, etc., of France, left profoundly unsettled. One fact, however—one that points toward the availability of any dyeing machine—is the potent effect of oxygen in any coloring process. Pure water without air has no effect upon any properly dyed stuff; and hardly any color is affected by light without air. Presumptively, no color would fade in a vacuum. A fresh photographic "proof," that under a clear sun would fade almost utterly in a few minutes, being wound lightly on an opaque cylinder will remain clear and sharp for many months; and the question was raised among painters in Rembrant's time, whether, since the air was the most fatal enemy of their work, they might not by long continued mixing so aerate every element in their pigments that the effects of time and air would be forestalled, and unfading pictures be produced. It seems a pity that some genius who had the faith to build for eternity did not put his life into the problem, and grind on in unison with the mills of the gods.

By these lights, it is evident that the aerating or oxygenizing properties of a dyeing machine are, one way or another, important considerations. What makes color, what sets or sharpens or weakens it, taken as facts won out of the practical manipulation of it, must all have bearing on the selection of a dyeing machine for any special purpose. Of course any specification of a dyeing machine before this Association would be as tedious as its advertisement would be gratuitous and unseemly. The opportunity of addressing this intelligent and liberal fraternity should very rarely be construed as the privilege of airing individual or corporate claims.

There are always certain epochs or stadia in the advancement of any art, which a friendly rivalry takes pleasure in recalling. One of these is the invention and introduction of the first of what is called the "Ferris Wheel" style of automatic dyeing machines. These men were the pioneers and primates of automatic dyeing machines in this country, ranking as originals with Howe and Hoe and McCormick in their special departments. Their method included a large wheel furnished with pockets for goods on its inner periphery, and revolving in a proportionate tub nearly filled with water or dye, to immerse and intermittently drain and aerate the goods. Their purpose was to do by machinery what had been done for centuries by hand, by the same ideal of results, namely; immersing, shifting, draining and aerating the stock in constant alternation.

Many and various devices and adaptations for different grades and styles of dyeing have followed the organization of this type, but their general principle, approved by the practice and test of many generations, remains the same. For simplicity of construction and operation, uniformity and reliability of result, the elder firm may perhaps be indulged in the homely suggestion that "the old way is the best," especially as reinforced by a choice among all later improvements. It is no invidious selfish suggestion, that something in

the philosophy of color, as such must accentuate a preference among dyeing machines themselves, regardless of their inventors and their proprietary rights.

When we speak of the philosophy of color, or strictly, the philosophy of anything, we leave the commonplace of the "safe and sane" behind us, and adventure into fields where the dust of mental conflict makes it difficult for common sense to breathe with the natural rhythm. It comes to doubt the stability of many offhand conclusions and to murmur with the poet, "things are not what they seem." It will regard with either jest or insult the saying, "color is all in your eye."

Plato, being pressed for a definition of color, said that under protest he would venture the answer, that "color is an effluence of form commensurate with sight, and sensuous." This "commensurate with sight" was the beginning of "idealism." Obviously he did not believe in color without eyes, nor taste without tongues, nor sound without ears, any more than he believed there could be "a good time" up in the woods when none of the boys were there to have it. He was very modest in such pretensions. He would certainly have thought twice over the flippant assertion of positive science that light (which was the wonder of wonders to him), is something that materially travels at a certain speed, so that what appears to us a star in the heavens may have been so far away that, though it perished a hundred years ago, its picture is still coming to us; this picture, as an independent thing in itself, traveling in every direction persistently through all the heavens, with the smoke of an explosion behind it. Surely we must say, with Lady Macbeth, "These things must not be thought after these ways: so, it will make us mad." The achievements of science deserve, and indeed command our very high respect, but there are sacred precincts where it is only useless and intrusive and where only faith has peace. There is a shallow and rash conceit of progress which breathes only contempt for the smooth bores of conservatism and orthodoxy, and boasts of the rifled guns of reason, adjudging mystery and superstition to the same grade of thought. This will not do. Mystery and faith are the last words of the latest thought. Reason is but an equation; it gives only a pound for a pound and adds nothing, while nature is a perpetual excess; she is ever more.

There is no philosophy which offers fundamental explanation. The first page of Kant divides knowledge into two stems of "an unknown root." The first paragraph of Locke on the understanding deprecates all pretence of the secret of consciousness itself. The Gifford lecturer of 1901-2 uttered to the university of Edinburg these words: "Those who have ears to hear let them hear; to me the living sense of reality comes only in the artificial Mystic state of mind." The most critical audience in Europe cordially applauded his expression.

Mr. Darwin, unhesitatingly presuming at least four species to start with, and in a thousand pages of evolution "allowing a single paragraph to the usual conception of God, bludgeoned all creation out of the survival of the fittest." He had to intend not merely the strongest but the meanest and most selfish. Mr. Darwin did not care to dwell upon the reversal of this half-truth of his, when the human race recoiled from its brutal impulse; when the Son of Man, perishing in his unfitness to his environment, turned the bloody tide of selfishness with the gospel that it is better to give than to receive, although we may have to survive Mr. Darwin's world to prove ourselves the fittest. Truly we are still sufficiently selfish, but selfishness is not our motto nor our creed. Civilization means benevolence and faith; and in this gospel more capital is invested than in philosophy, cotton and wool and steel and oil combined.

We hear altogether too much of science that does not really know, of secondary causes which do not explain, but rather detone that reverence which assures cultured propriety. We are too ready to ignore the divine in life.

There is a great deal of foolishness extant as to the "laws of nature," and if they impersonally did something, or accounted for something. These laws, so called, are our historical inductions from experience; they proceed from results, not to them, and they are but partial approximations at that. We have had our ideas of power, and its cost; a ton of coal is good for so much; and now comes radium, stultifying all our notions of material expense. We really know no original cause except personal will, if even this be such. It was the last word of the greatest of the Germans: "The highest, steepest thought is Personality." With a little reflection, and what is far better, a little modesty, we might learn to say with the ancient. "The fear of the Lord is the beginning of wisdom."

This of ours is a signally great and eminent Association. It stands for wealth, intelligence, success, and moral and material power; and it is responsible for its quotation in the world at large. The consensus of such a body is potent in the thought of its time, and the problems of its age—

"Speculators lost
Chase up the rills of childhood's prattling talk,
To catch life's waters nearest the fountain head."

How much more eagerly should they seek the animus and trend of a convention such as this.

The indications are that our race is only at the beginning of its career,—that though born in the purple we have not yet come to our own. Through the evolution that shall be we may come to touch the "mental specters" that haunt and puzzle us, with new and more sensitive fingers and thumbs. Surely we are as worthy as our environment, and why shall we not understand it. Surely we shall. The surds of mathematics shall dissolve in white-hot crucibles of an intenser thought. There shall be heard no more of "irrational numbers." The transcendental fractions of a unity more central than ours shall exploit the quadrature of the circle; we shall write the square root of two.

Then a larger optimism will expand the human heart—ashamed that it ever yielded to despair or despondency in so beautiful a miracle as life. And although we may perhaps never lift the veil which, perhaps kindly, hides from us the future, we may

still light our torches at the Islands of the Blest, and push on

"For that far-off divine event
To which the whole creation moves."

The Textile Mill Power Plant.

LEWIS SANDERS, 90 West St., New York.

The function of a textile mill being the production of goods, its power plant is naturally of secondary importance. In the majority of mills it is probably regarded as a necessary nuisance and it is so from the standpoint that its construction and operation involve a line of management and specialized knowledge that is entirely foreign to the main business of the mill. In fact to reach the maximum of economy requires a distinct mill organization and a distinct power plant organization, as each line of work is so highly specialized that the same men cannot handle both lines efficiently.

RELATION OF MILL AND POWER PLANT.

In spite of its position of secondary importance, the power plant is a very serious factor in the profit earning capacity of the mill; and the mill's sole reason for existence is its ability to make profits. Poor power plant design may reduce the output of a given mill and its operatives from one per cent. to five per cent. from this cause alone. Irregular speed will increase the number of defects in the product Poor artificial illumination will increase the number of defects that escape detection during manufacture, when they could be remedied, and cause them to appear in the finished goods, deteriorating the quality of the mill's product. These are the direct effects of the power plant on the mill production and they are almost entirely a matter of power plant design.

Second, there is the effect on mill profits of the operating expenses of the power plant. The operating cost is partly dependent on design and partly on operation. Frequently insufficient attention is paid to the economics of the power plant, as a power plant, because its total expenses represent only three per cent. to five per cent. of the total expenditures of the mill. It is, therefore, assumed that any economies that can be effected are not worth the trouble involved, as their influence on the total mill costs would be lost. The true measure of the value of any possible saving is its relation to the net annual profits, because it will increase them directly by the amount saved. The writer has examined mills where the possible savings in the power plant equaled over twenty per cent. of the annual profits. We all know how interested a manufacturer would be in securing a single order that was so large it equaled ten per cent. of his annual business, yet the profit from that order would ordinarily only be ten per cent. of the annual profits. How many mill men would show anything like the same amount of interest in a proposition to decrease the power plant costs by an amount equal to ten per cent. of the annual profits? The order secured may not be repeated next year while the economy effected repeats itself every year and quite regardless of business depressions.

THE OPERATING MANAGEMENT OF THE MILL.

The operating management of the mill has to attend to the purchase of the raw material, its preparation and manufacture and the management of the mill operatives. On the efficient performance of these duties depends the financial success of the mill. This same management also has to operate the complex power plant which has become a separate business in itself. This auxiliary business can very seriously affect the profits of the mill, if it be not well run. On the other hand the management cannot give the power plant the study and attention it deserves, without taking so much time from the mill work proper that the losses entailed throughout the mill will far more than offset the economies effected in the power plant.

Important as the economical power plant is to the mill, it should never be lost sight of that economies obtained here are dearly bought if they take the thought of the management from the mill. It would take a reduction of power plant costs of about twenty per cent. to offset a loss of mill efficiency of one per cent. It is evident that the power plant problem must be met without adding further work in that line to the already heavy burden on the mill management. On the contrary the management should be relieved of all care of the power plant and allowed to devote its entire energy to the mill proper.

Manufacturers confine their business as closely as possible within the lines of their experience and specialize as much as possible. The cotton mill man, in fact, even specializes his mills, as far as possible, on various classes of cotton goods. He has even, in many cases, turned the selling of his goods over to commission houses as being specialists in selling. Only when he comes to his power plant does he violate his rule of specialization. Until recently he had to enter into the power plant business whether he would or no, as there was no one else to do it for him. This is no longer the case and the continuance of it is only to his own detriment. It will be to the profit of those manufacturers who first take advantage of the new situation and evolve a proper method of divorcing the power plant business from the business of operating a textile mill.

COOPERATION AMONG MILLS.

In some cases the manufacturer's power plant problem can best be met by the mill buying its power from the central station. That this solution has not met with more consideration is much more the fault of the central station men than it is of the mill men. Very few of the central station managers are as yet willing to make reasonably low rates for mill power. They will have to be educated to the value of the uniform load of large cotton mills and made to see where their true interests lie. This frame of mind on the part of the central station man is largely attributable to the genesis of the electric power industry. The central stations were originally put up exclusively for the purpose of furnishing electric light and power business was not considered. It is only within the last ten years that the power load has become of such great importance, and the construction of the power plants has been modified to meet the

change more rapidly than have the minds of the men who operate them. They are still running a lighting business first and a power business second; in a few years we will find that power is the business of the central stations and that the lighting load is a profitable by-product.

In the case of the great majority of mills the central stations either cannot or will not meet the conditions, and the purchase of power is not feasible. The solution of the problem in these cases, according to the ideas of the writer, calls for the creation of what is practically a separate power plant company to furnish the power for the mill. The sole business of the power plant organization would be the generation of the power and steam required by the mill at the lowest possible costs. The mill would take power and steam from this organization exactly as it would from a central station. It might at first sight appear that this method would be productive of friction between the mill and the power plant organization, owing to the latter trying to make a record for low costs by curtailing the mill in the use of steam and power. This would not be so because the power plant would be credited with the total steam and power supplied the mill, and the cost of production would be figured per unit. The mill on the other hand could draw all the steam and power it required, and would be careful to keep all its textile machinery in good repair, and to see that no steam was wasted in manufacturing processes, as it would know that the power plant was charging it with all it consumed, and that any waste would be immediately shown up.

The power plants of the larger mills are of sufficient size to permit of carrying out this scheme independently, but the smaller mills could not do so. There is no reason why the mills should not cooperate in this matter, and a number of mills have a power plant organization in common; the more mills so combining the greater would be the economies effected. Where mills are located sufficiently near together, a common power plant could be used with economy to each.

The fact that mills are keen competitors should be no bar to cooperation as regards their power plants, any more than it would prevent their buying power from the same water power company. The mill's field of competition lies in the excellence of the product turned out and in the field of selling ability. It is a loss to all concerned to carry the competitive spirit into those portions of a business where it does not belong; the beneficial results obtained from such societies as The National Association of Cotton Manufacturers is evidence enough of this.

The benefit to the manufacturer, of having a common power plant organization operating the plants of a number of mills would be considerable. Probably the greatest single advantage would be the freeing of the mill management of all work in connection with the generation of power and permitting it to concentrate its entire energy on the production of goods. The mill man would do well to consider how much more efficient his presumably good mill management might be, if it had nothing to distract its attention from the mill work.

INVESTMENT BASIS OF POWER PLANT.

In deciding upon the type of power plant to construct, or upon the improvement or replacement of an existing plant, the investment must be considered. A high grade plant giving the maximum economy of operation, which may show the best investment value in a locality where coal is $4.00 per ton, may, where coal is $1.00 per ton, show a lower investment value than a less economical but cheaper plant.

The writer would suggest as a basis of fixed charges for mill power plants, that they be charged with 10 per cent. depreciation and 6 per cent. interest, equivalent to 3 per cent. on the initial cost of the plant during the ten years that it is being written off. This gives 13 per cent. fixed charges to be added to the operating expenses in comparing the relative economies of several proposed designs of plants. When alterations to an existing plant are contemplated, it may be necessary to charge the improvement with a higher rate of depreciation than 10 per cent., owing to the fact that the life of the improvement might be limited by that of the old plant. In deciding to replace an old plant with a modern one, the new plant should be charged with the fixed charges on its investment but the old one should not, because if the new plant does not show economies sufficient to absorb its fixed charges, and to show a profit besides, it will not pay to make the change.

The rate of depreciation recommended, 10 per cent., is not advised on any idea that the power plant machinery will be worn out in ten years, as in fact most of it should last twenty, under good management, and maintain its efficiency. It is advised because the advances in power plant equipment are so rapid that the plant may readily be obsolete in ten years, and warrant replacement with a more economical type. For instance, first class engine plants, in textile mills, installed less than ten years ago, are already being rendered obsolete by electrification and by the steam turbine, and will be made more so by some special modifications of the latter which the writer has in view for the purpose of adapting it more specially to mill conditions. This is not because the engine plants are any less efficient today than when built, if they have been kept in first class repair, but merely because the turbine offers opportunities for effecting economies that the engine does not, and plants can be built that are more economical than any engine plant that can be designed. In some cases these economies are so great as to permit the scrapping of the whole of the existing plant and the construction of a new one. In ten years from now the gas engine may have developed to a point of reliability where it would displace turbines, on account of its greater economy; today it cannot do so.

EQUIPPING OLD MILLS WITH ELECTRIC DRIVE.

Many mills that are belt driven have considered changing to electric drive but have abandoned the idea when they ascertained the cost, because the saving did not appear to justify the investment. There is no question but that the most economical way to build a new mill is with the electric

drive, but with an old mill the saving must justify the scrapping of an existing investment and its duplication by the new plant.

The saving to be effected in the power plant of a belt driven mill, by merely changing from belt drive to electric drive, will in very few cases warrant the change. If, however, the proposition be taken up more fully and the opportunity be taken to completely redesign the entire power plant, then the economies that can be effected will very frequently be found to justify changing the entire installation. Again, in deciding what prospective gain there is in changing a belt driven mill to electric drive, the effect on the production of the mill should be taken into account. The speed of every individual machine in the mill should be determined, to ascertain how many run below the maximum permissible speed. Suppose the introduction of the electric drive will increase the mean speed of the machines 2 per cent., besides giving a more uniform speed, the mill production will be increased by about that amount, without any increase in machinery or operatives, and possibly with less expense for repairs. This item alone will in many cases warrant electrification.

IMPROVEMENTS TO MILLS.

In making improvements to mills it is important that these should not be made in a disconnected manner, but should form part of a comprehensive scheme. If a mill has a plant which is becoming out of date, complete plans for a new plant, suited to the local conditions, should be prepared. In case it is not desirable, or the mill is not financially able to reconstruct the entire plant at once, the plans should be so drawn that the change could be made gradually. Thereafter all improvements to the power plant should be made in accordance with these plans. Every mill man has probably seen enough of piecemeal improvements that in the end proved costly economies, because they finally blocked the construction of the most economical plant possible. The heavy investment in these improvements, that could not be utilized if the best possible plant were to be obtained, prevented any further progress.

[The author then discussed in great detail a number of investigations of mill power plants with cost of operation. This may be had complete in pamphlet form by interested parties.]

The writer strongly believes in the use of recording instruments throughout the power plant, as it can then be run on a continuous test basis. If the records are not going to be properly analyzed, and if every defect of apparatus or of operation that they detect is not going to be immediately remedied, do not install any recording instruments or a record system as it will only be a waste of money. If the results are utilized the money invested in recording instruments will prove a paying investment.

SEPARATE POWER PLANT ORGANIZATION.

We will consider some of the details of management where a number of mill power plants are to be operated under the control of a separate power plant organization. The power plants would be operated under the supervision of a central engineering office, located at the most convenient plant. To this office the daily records of all the plants would be sent, together with a report from the mill office showing the number of looms and spindles at work and the output. These records would be promptly worked up and any power plant immediately notified of any falling off in its efficiency and the cause. A weekly report would be prepared for the owners of each mill, showing power plant costs and efficiency and mill output and efficiency, in a form that would present a clear view of the results being obtained and the cause of any changes. An inspecting engineer would go from plant to plant as a critic on the operating force and to suggest improvements in methods.

A school of instruction for firemen and engineers would be maintained at one of the power plants and also an experimental station.

At the power plant used as an experiment station new coals would be tested to check the results of the laboratory tests. As broad a market as possible would be created for the purchase of coal, so that the lowest prices could always be obtained without entailing the risk of getting an inferior coal. Any new devices that appeared worth investigating could be thoroughly tested out. In most cases the manufacturers of such devices would be glad to submit them free for trial, if they were given the test results, as they would feel that a successful test would lead to considerable business. The costs of such tests would be slight, as they would be made in the regular course of operation of the mill. All oil, packing and other supplies would be bought on the results of the service given per dollar expended, careful records would be kept of the service results obtained from all supplies.

Coal should be purchased on the basis of analysis from among the coals that have passed satisfactory service tests. All coal received would be sampled and the samples sent to the central office for analysis. Premiums and penalties would be enforced on the coal companies for any departure from the standard coal that they had agreed to deliver. In Chicago a company has built up a business as coal inspector on something like 1,000,000 tons a year. The results are evidently sufficient to pay a profit to the company and save its customers' money as well.

We will thus have effected a reduction of power plant costs through having given them a higher grade of supervision at a less cost per mill, operation by better trained firemen and engineers, a system of records and inspection that will immediately detect any defects of apparatus or carelessness on the part of the men and enforce its correction, the purchase of the most economical coal, and of supplies that give the highest return for the dollar, and records that will prevent waste of supplies. Besides being able to purchase the best in the market, we should be able to obtain a concession from market prices on account of the combined purchasing capacity of the plants. Very few mills realize what such savings might total because they are quite unaware of the extent of the losses. The first step necessary in order to effect an economy is to discover the loss. As pointed out, few plants have any system that discovers the loss.

Complete plans should be prepared of each mill, giving the location of all machinery, piping, valves,

etc. These should be kept up to date by entering on them all alterations as made. The absence of such plans is a great hindrance to the making of changes and improvements at the least cost.

The relations of the power plant organization to the mill owner would be the same as to his mill manager. The owner would have just as complete control over his power plant as he had over his mill. The relation of the mill management to the power plant would be that of a favored customer, all of whose requirements must be met. The management would simply be relieved of the responsibility of carrying out the work.

It would seem that we might safely arrive at several conclusions from the foregoing discussion, among them the following.

The need of a higher grade of engineering skill and a more careful study of local conditions in the design of a mill power plant.

The Relationship Between Cones and Flyers Upon Cotton Roving Frames.

FAY HAMLIN MARTIN, Boston, Mass.

The cones of a cotton roving frame are its most essential feature, as upon them depends the perfect winding of the bobbin, and the more accurate their outlines, the more perfect the winding, and the more perfect the winding, the more perfect the roving that is produced. It is the function of this paper to tell you some of the conditions that enter into the calculations for obtaining the true outlines of a pair of cones. Most writers ignore these conditions or overlook them, whether intentionally or otherwise we do not know. We shall not speak of them all, for we cannot in the short space of this paper. We have assumed that you are all more or less familiar with the cotton roving frame or the fly frame, as it is more usually called, that you are acquainted with its principles and functions. But perhaps it would be well for us to briefly outline what is required of the cones. The cones are for the winding of the bobbins, and to date no satisfactory mechanism has been devised to take their place, although any improvement over the method now in use would be most welcome indeed, for the good working of them depends upon a piece of belting, which we consider one of most important in all of the minor belts of a cotton mill. How bobbins are wound is often puzzling to even practical men, but it is simplicity itself. So many inches are delivered by the front roller per minute, and just the same number of inches must be wound upon a bobbin in the same time. Now consider the spindle and flyer as standing still, and we will assume that the roving will draw through the flyer without twist and without breaking. Thus it will be seen that the surface speed of the bobbin must equal the surface speed of the front roller, which is constant. This continues for one layer upon the bobbin, at the end of which time the revolutions of the bobbin is reduced in the right proportions to keep the surface speed the same as before, and so on until a full bobbin is formed. At the end of each layer an adjustment of the revolutions of the bobbin takes place, and this is done by automatically and positively moving the cone belt to a new position. The amount of movement is the same all through the building of the bobbin for a given hank. As each layer is being put upon the bobbin, the cone belt is working upon certain diameters of the cones to produce the right revolutions to keep the surface speed always the same. We trust that we have made this point plain, and we think you will see it when you consider the winding separately from the rest of the fly frame.

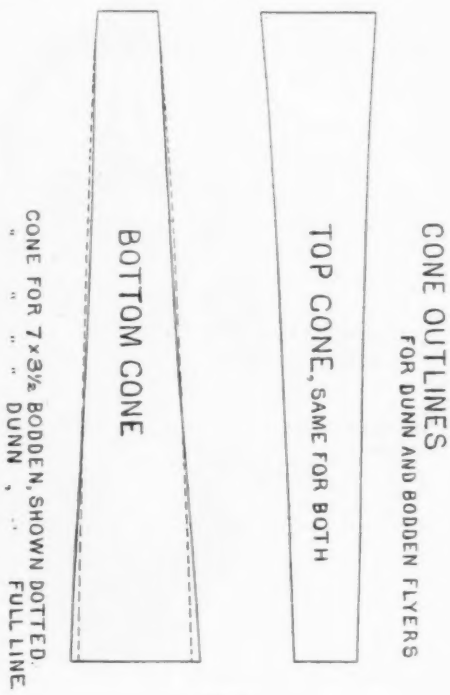

CONE OUTLINES
FOR DUNN AND BODDEN FLYERS
TOP CONE, SAME FOR BOTH
BOTTOM CONE
CONE FOR 7×3½ BODDEN, SHOWN DOTTED.
" " " " DUNN, " FULL LINE.

FIG. I.

But we have to put twist into the roving; to accomplish this we drive the spindle and flyer at a positive speed, and in direct relation to the front roller. The bobbin is also driven at the same speed, and works as one with the spindle in forming the twist, thus if the spindle is making 1,250 revolutions, the bobbin is also making 1,250 revolutions per minute, for the forming of the twist, but the bobbin has also got to do its winding in addition, and as we have already shown, the winding is governed by the cones. It is the adding of this variable speed of the cones to the positive speed for the forming of the twist, that the differential is used. This mechanism, which is surrounded by a great deal of mystery, and of which the machine builders speak in almost tones of awe, is nothing more or less than a plain adding machine, and all that is required of it is to add the variable speed of the cones to the positive speed of the main shaft, and do it in a positive and easy manner, with as little friction as possible. We think we hear some one saying, he is not sticking to the subject, and has digressed to tell us some-

thing that we are so familiar with that we really had forgotten all about it. Let us see, our subject is: "Relationship between cones and flyers upon cotton roving frames." What can there be to write about them, and we will say, that in all of our research work we have found the answer to be, nothing. But from the practical and hard work of the development of a new principle flyer, each one-eighth increase in diameter of bobbin. This is quite right as far as it goes, but they leave us to assume that the diameter of a strand of roving remains the same throughout the bobbin. As a matter of fact the strand as it is laid upon the bobbin is of a less diameter, or occupies less space at the beginning than it does at the finish of a bobbin. This increase is very gradual,

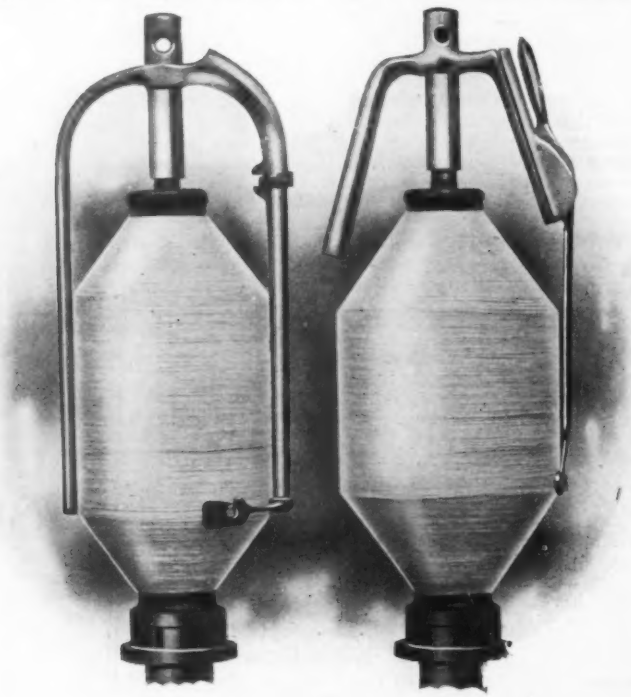


FIG. 2.

BODDEN FLIER. DUNN FLIER.

we have found that a very close relationship exists, so close that the true outlines of the cones depend upon the type and size of flyer being used. Other conditions come in, but the flyer governs the outlines largely.

A great deal has been written upon the subject of cone drums and the peculiarity in the construction of them, which at once arrests the attention of even the most superficial observer. We mean the fact that the cones are not of a straight uniform taper, i. e., they are not right cones, but the top or driving cone is hollow or concave in its length, while the bottom or driven cone is convex in outline. Long articles have been written upon the explanation of the theory of this, but we have yet to find that the authors have ever taken into account the pressure of the presser upon the roving. They all assume, and say, but not in quite the same words, that the amount of rove given out being constant, it is necessary to vary the speed of the bobbin in proportion to the increase of diameter, to prevent stretching. That the cone belt is to move one inch on one cone for but constant and is caused by the pressure of the presser condensing the strand. This pressure is greatest when the bobbin is empty or small, and lightest at the finish or full bobbin. Other conditions to be considered are the speed of the spindle, slipping of the cone belt and the hank roving being spun. These must all be taken into account. Therefore, in finding the true outline, each layer of a bobbin of roving must be considered separately and the diameters of the cones figured for that layer alone. Cones are really so many separate pairs of pulleys connected together in a continuous string.

We will now submit a few proofs of our assertions with diagram showing that the style and type of flyer being used largely influences the true outlines. We show in Fig. 1, the outlines of two pair of cones, one pair of which, shown in full lines, were made to carry an 8 by 4 flyer, and spin the roving usually spun upon that size 1 1/2 to 2 1/2 hank; the other pair, shown in dotted lines, were made to carry a 7 by 3 1/2 flyer. Both pairs of these cones were made for, and were used

in frames equipped with the usual type of flyer. If the flyer had no influence over the shape of the cones, the 7 by 3 1/2-inch size flyer would run all right upon the 8 by 4 cones but no satisfactory results can be obtained by swapping them around in this manner, neither will the 8 by 4 flyer produce good work when the winding is done with 7 by 3 1/2 cones. We will also add that the cones for 6 by 2 1/2 flyer are of a different outline than those shown and partly for the same reasons.

To illustrate our argument further, we show in Fig. 2 two types of flyers, both made to run upon the same size of frame and in the same space, but of entirely different principles. The exact center does not appear for very practical reasons, hence the presser is hung upon two Tobin bronze bushings that are attached to the tube arm of the flyer.

The grooves that are in the presser that come in contact with the bushings are in the form of segments of a circle, and the action of the presser is the same as though it were hung upon a single pivot half way between an empty and full bobbin, as before stated. The action of the presser is centrifugal, the same as upon the common flyer, but the lower portion acts as a continuation of the tube, and gives support to the roving on its way to the bobbin. A feature of this principle and construction enables a larger diameter bobbin to

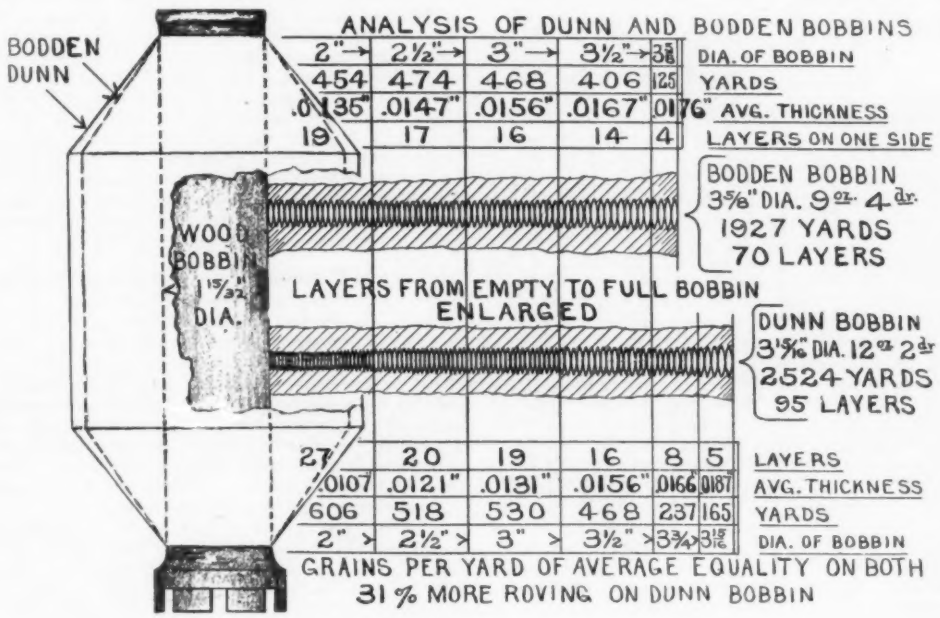

ANALYSIS OF DUNN AND BODDEN BOBBINS
BODDEN
DUNN
2" → 2½" → 3" → 3½" → 3⅝ DIA. OF BOBBIN
454 474 468 406 125 YARDS
.0135" .0147" .0156" .0167" .0176" AVG. THICKNESS
19 17 16 14 4 LAYERS ON ONE SIDE
BODDEN BOBBIN
3⅝" DIA. 9 oz. 4 dr.
1927 YARDS
70 LAYERS
WOOD BOBBIN 1 15/32" DIA.
LAYERS FROM EMPTY TO FULL BOBBIN ENLARGED
DUNN BOBBIN
3 15/16" DIA. 12 oz. 2 dr.
2524 YARDS
95 LAYERS
27 20 19 16 8 5 LAYERS
.0107 .0121" .0131" .0156" .0166 .0187 AVG. THICKNESS
606 518 530 468 237 165 YARDS
2" > 2½" > 3" > 3½" > 3¾" > 3 15/16 DIA. OF BOBBIN
GRAINS PER YARD OF AVERAGE EQUALITY ON BOTH
31 % MORE ROVING ON DUNN BOBBIN

FIG. 3.

flyer upon the left you will all recognize at once, as it is considered the standard of the world and well it might be so, for no change of any moment has been made in it for the past fifty years and millions of them are in use. The cones upon all makes of fly frames have been made and remade to run this style, and this only; if everything was not satisfactory in the winding, the cones have been changed to make it so instead of the flyer. Its principle is of a presser being hung upon a vertical axis, which is the hollow or tube arm of the flyer. The weighted or leg part of the presser has a centrifugal action and assists in compelling the presser finger to have a centripetal action around its axis.

The flyer shown upon the right, you are not so familiar with, but possibly you may recognize in it the so-called "Dunn-Flyer." Its principle is of a presser being hung upon a horizontal axis, the center of which is located approximately half way between an empty and full bobbin but the be made upon the same spaced frame, also the roving is more compactly wound. We will say that this condensing does not all come from the pressure of the presser upon the strand, but is largely due to the shape and principle of its presser foot, in connection with the method of threading. We have analyzed two bobbins, the results of which we show in Fig. 3.

These bobbins were taken at random from their respective frames, both frames were of the same size, and were built by the same firm, and both were run by the same girl, and at the same speed, making approximately four hank roving. One was equipped with Bodden flyers, of the type shown on the left in Fig. 2, with a pair of cones that were made to carry said flyer, the other frame was equipped with Dunn flyers of type shown on the right in Fig. 2; this frame was supplied with a pair of cones that were worked out and made to run the Dunn flyer. In this analysis, we have tried to show in graphic form the prin-

ciple of why different outlines of cones are necessary for different type of flyers, also different sizes of the same types.

To get the true outlines, each layer that is upon a bobbin must be considered separately, and by this analysis, which we show in Fig. 3, you will see that a bobbin does not increase in diameter as fast as when the bobbin is small as it does when it is large, also the increase is different with different flyers. We have shown the layers from an empty to a full bobbin, of each kind, in sections, and upon an enlarged scale. The first section is

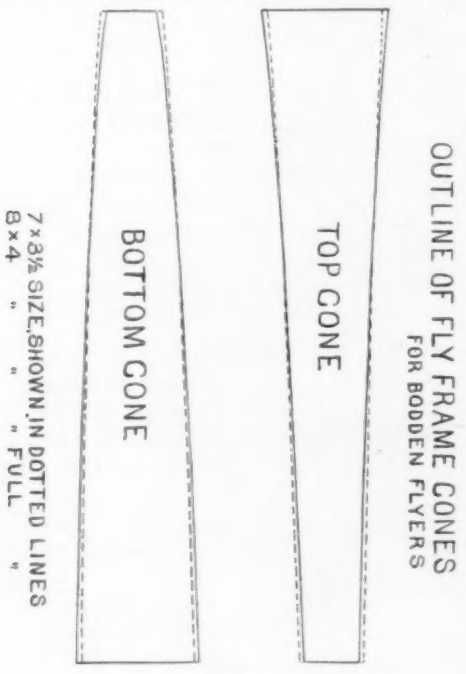


FIG. 4.

of layers from an empty bobbin to one 2 inches in diameter; the second section is of the layers that are between a bobbin 2 inches in diameter and one 2 1/2 inches in diameter; the next is from 2 1/2 to 3 inches, and so on up to a full bobbin. You will notice that the average thickness of the layers from the Dunn bobbin, in the first section is .0107, while from the Bodden bobbin it is .0135, also that there are 27 layers on the Dunn, against 10 on the Bodden, in the same space, with 606 yards from the Dunn, against 454 from the Bodden. The average thickness at the full bobbin also varies, those on the Bodden being .0176, while those on the Dunn are .0187, but it must be remembered that the Dunn bobbin is 3 15/16 inches in diameter, against 3 5/8 inches for the Bodden.

In considering each new diameter of a bobbin, after a layer has been put on, for the outline of the cones, for a constant movement of the belt, it will readily be seen that the outline of the cones will be as different as the layers are on their respective bobbins.

We show in Fig. 4, the outlines of the cones used in making these bobbins, and as they have been worked out, and are now in practical operation, it ought to show conclusively that the true outline of a pair of cones depends largely upon the type and size of flyer being used. Thus you will see that the relationship between cones and flyers is very close indeed, so close, that if the flyer is changed, the cones must be changed also; hence one dominates the other, and it is from this fact that no real beneficial improvements have been made in roving frames for many years, but by changing the type of the flyer, not only can more roving be put upon a bobbin, but it will be possible to so improve the fly frame, that fine roving spindles can be run at a speed of 2,000 revolutions, or better. We could name other improvements, but that is another story.

A thing is considered right, just so long as there is nothing better known; this is why it has been possible for the English flyer to dominate the situation for the past fifty years, and will do so for the next fifty years to come, if bright and enterprising manufacturers do not assert themselves and demand the improvements that can be had.

Textile Testing in Europe and America.

ROBERT J. HOGUET,
138 Spring Street, New York City.

While we must go a long way back to find any notable improvement in textile manufacturing, adopted in this country merely in compliance with European practice, and while the movement of inventive skill has rather been in the opposite direction, there are certain methods which European manufacturers have adopted as the result of study and experience which it may be to our advantage to examine. Foremost among these is the independent testing of textiles for moisture, count, twist, strength, elasticity and other proper ties which can be expressed by accepted standards.

Tests of textile or rather materials by manufacturers who have gone to the expense of purchasing the necessary equipment, may be satisfactory to themselves, but have not been found in Europe to be suitable as a basis of adjustment between buyers and sellers in the transaction of ordinary business, still less so in the matters of dispute where impartial expert testimony is called for.

Besides the chain of silk conditioning and testing houses in all parts of the world, we have the group of seven testing establishments in the north of France, through which there passed in the year 1907 no less than 225 million pounds of wool, cotton and other staples, in a more or less advanced stage of manufacture. In Germany, where the principles and practice of conditioning have been recognized by the national statutes, in addition to local testing houses, there is a central testing station at Gross Lichterfelde near Berlin, where disputed points as to textiles are investigated by experts. As the general principle of subjecting textiles to impartial testing has done much to promote

European developments, the logical inference is that the methods used by our competitors in the markets of the world, merit investigation and prompt adoption, so far as they harmonize with American requirements. It may therefore be to our advantage to consider a little in detail our position in the question of testing textiles.

When we recollect that 67 per cent. of the cost of our cotton goods' product represents the materials used by our manufacturers, it is a natural question why they do not all adopt the principles of testing applied to purchases of raw materials by the metal, chemical and paper industries. A sheet of paper, for instance, is apparently a simple product. Yet all its components have at their various stages been submitted to mechanical or chemical tests of such a nature, that the paper manufacturer knows exactly what he is getting and paying for. It is quite as important for the textile manufacturer to see that he gets no more than a legitimate percentage of moisture, as to make sure he gets his right number of bales. Manufacturers would complain loudly if they only got 95 bales and had to pay for 100, and yet they patiently submit to the shortness in weight represented by the presence of excess moisture, however it may have been added.

THREE INTERESTS AFFECTED.

Our national cotton industry has three broad divisions: Manufacturers who spin for their own use, spinners who make yarns for sale, and manufacturers who purchase yarns. However these interests may be interwoven, they are all affected by the general question of testing, and particularly by that of conditioning. Taking first the case of the larger establishments comprised in the first two divisions the subject of moisture in raw cotton is for them a living issue and a matter of dollars and cents. It is a gratifying sign that planters in twelve cotton growing sates are forming an organization for getting into direct relations with American and foreign spinners. The first question which will confront them is that of moisture in the raw staple. What has to be determined is the absolute dry weight, apart from the question of the regain to be added. This absolute dry weight is only to be found in one way: by means of accurate and impartial tests, without fear and without favor, with a view to avoiding the unseen losses that are now taking place.

In this connection let me remark that by "conditioning," I mean the determination of the quantity of moisture in any textile material, and not the addition or removal of such moisture by natural or artificial means.

BUYERS AND SELLERS EQUALLY INTERESTED.

To arrive at definite facts is alike in the interest of buyers and sellers. A prominent expert in raw cotton, when discussing this matter with us the other day, suggested that spinners would derive much benefit from getting samples of their prospective purchases of raw cotton tested for moisture; the same principle applying to yarns. Buyers of yarns do not in all cases realize the sources of the cautiously veiled opposition to conditioning or testing, which is attributed to certain interested quarters. It is for buyers to investigate the matter, taking the advice embodied in the old Latin proverb: "Let the buyer look out for himself." Buyers of raw cotton are also frequently sellers of yarns, and in that capacity stand in need of impartial tests: particularly in cases of disputes with yarn buyers. Conditioning is not a matter of opinion, but (to use a legal phrase) a "finding of fact."

Records of actual tests on a large number of cases of cotton yarns, have lately shown an appalling lack of uniformity as to moisture, only accurately revealed by the process of conditioning.

WOOL TESTING.

The whole subject of testing wool is now being dealt with by a representative committee of woolen manufacturers. Which of our members will seriously maintain that we have less interest than our colleagues in the woolen industry, as to not paying for the excess of moisture at the price of raw or semi-manufactured material.

TESTS OF FABRICS.

What has been said as to the importance of testing textile materials, applies with equal force to the application in the case of finished products, of the tests necessary for establishing their intrinsic qualities. The up-to-date manufacturer is as often testing his competitor's goods as his own; seeking for the determination of values by accurate comparison. The value of a thorough system of testing and the evil results of its absence, have recently been illustrated by the regrettable mistake of our authorities in not recognizing that they were offered better value in American khaki cloth than in English fabrics. Had the samples been subjected to impartial comparative tests, the capacity of the American manufacturers would have been promptly recognized, and they would have had an opportunity of competing for the identical specifications placed before British makers. While the whole facts are not yet published, enough is known to show that bureaucracy and red tape have been working to the disadvantage of American manufacturers, owing to the absence of such comparative tests as would have undoubtedly proved their superior ability in the textile industry.

Gentlemen, testing or conditioning is a matter which comes home to all of us, whether as buyers or sellers of raw cotton yarn, or fabrics. Let us look at it with broad minded discernment and with a common desire to facilitate the conduct of extensive and profitable business operations.

The Place Which the Cotton Manufacturer Fills in the Economy of the Nation.

E. HOWARD BENNETT, 31 Nassau St., New York City.

Whenever an industrial breathing spell occurs, we hear complaints that there are too many spindles in the cotton industry; but there will always be occasions of this kind, and they afford an opportunity for invention and economy. Necessity is the mother of invention and it is not alone in processes of production that chances for improvement in the cotton goods industry occur. The opportunities for better methods of distribution, especially in the retail trade, are very considerable. In round numbers the annual cost of domestic cotton goods in the United States to consumers ag-

gregates $1,000,000,000 or $12.50 for each man, woman and child of a population of 80,000,000.

Of this $1,000,000,000, about 23 per cent. is taken by the farmer and factor and other agencies in getting the raw cotton to the mill; about 27 per cent. by the manufacturer to pay for oils, starch, dyestuffs, depreciation, labor, dividends and other expenses of putting the completed goods into the hands of the selling agent; and 50 per cent. by the merchant, that is, by the commission house jobber and retailer. The cost of commission house services has been reduced in recent years and the jobber also works upon a small margin, but the expenses of the retailers have increased enormously during the present generation and they now take a strong 33 1/3 per cent. of the $1,000,000,000 that the American people pay for domestic cotton goods. The store expenses alone, of the average department store or retail dry goods "emporium," are 25 per cent. of the annual turnover or gross business.

It must be borne in mind that the above percentages are figured downward from the aggregate sales of $1,000,000,000 of domestic cotton goods to the American consumers. Figuring upward, the 33 1/3 per cent. of the retailer becomes 50 per cent. upon the price at which he receives the merchandise; and the combined 50 per cent. of the selling agent, jobber and retailer is, of course, equivalent to 100 per cent. upon the actual cost and reasonable profit upon the goods since delivery to the selling agent.

That is to say, all of the American cotton goods for domestic consumers are put into the hands of the selling agents at a cost and reasonable profit aggregating $500,000,000. The wholesale and retail merchants have added 100 per cent. of the entire $500,000,000 to their cost when the fabrics finally reach the consumer; but this $500,000,000 is 100 per cent. upon the cost and reasonable profit to the manufacturer, it is but 50 per cent. of the $1,000,000,000 which represents the aggregate cost of domestic cotton goods to the American consumer. This explanation of percentages is important to avoid confusion, and it brings us back to our original proposition: that the merchants take 50 per cent. of the amount paid by the American people for domestic cotton goods; that the manufacturer takes 27 per cent., including the cost of supplies other than raw cotton; and that the farmers take 23 per cent. including the cost of delivering the raw material to the mill.

The school text books teach us that human industry is divided into the three branches of Agriculture, Manufacturers and Commerce. All of these are largely represented in the cotton industry. It will be seen that the merchants take the largest percentage of the combined production. The percentage taken by the railroad is less important than most people think and it is estimated that the total cost of transportation of the products of American cotton mills to the selling houses, jobbers, retailers and consumers does not aggregate over 2 per cent., or about $20,000,000 of the $1,000,000,000. A careful survey of the whole subject shows that in transportation as well as in manufacturing, the tendency has been towards reducing the cost, while in the retail distribution the tendency has been in the other direction. We do not argue that the increased cost of the retailers' services is an unmitigated evil. Perhaps their value to the public has grown in the same proportion. We merely indicate that the manufacturer has been performing his part of the missionary work of clothing the American people and setting them up in housekeeping at a much lower cost than the merchant.

The entire so-called science of political economy has concerned itself for 150 years merely with the production of wealth, so that it has been lately felt that the question of distribution of wealth was not receiving its fair share of attention. So in a similar manner in the cotton industry the question of production seems to have overshadowed that of distribution and the promotion of increased trade.

While I have dealt somewhat boldly with the above percentages of production and distribution, I hope not to suffer the fate of the judge down in Maine whose decisions were a marvel of judicial wisdom and so long as he refrained from explaining the process by which he arrived at his conclusions, they were never overruled by the upper courts. Intoxicated by success he began to give reasons for his opinions and his reasons were so inferior to his conclusions that his decisions from that time forward began to be upset by his superiors. The American mills bought 5,195,750 bales of cotton in the year 1906-7 which cost about $303,000,000, but only 3,785,992 bales went into cotton cloth, and this cotton cost $227,057,512. The average cost of cotton during 1906-7 was 11.46 cents per pound, and the 23 pound tare out, we figured the total production of American cotton goods at 8,000,000,000 yards, or 100 yards for each man, woman and child in the United States, valued at a trifle over 6 cents per yard at the mill and weighing about 4 yards to the pound.

In this way we obtained a cost of $6.25 at the mill for cotton goods for every man, woman and child in the United States; and a cost of $12.50 for the same goods delivered to the consumer. A single dollar per capita added to the present consumption of cotton goods would give the retailers of the United States $80,000,000 additional business, of which the merchants would take $40,000,000, the manufacturers $21,600,000 and the farmers $18,400,000. I have shown how modest is the compensation of $6.25 per capita which the cotton manufacturer receives to pay for his raw material, supplies, labor, dividends and all other expenses. It is not probable that the cotton manufacturers receive from the people of the United States more than fifty cents per capita for dividends and profits upon the entire domestic production of cotton goods."

Cancellations of Orders. Their Cause and Remedy.

WALTER S. NEWHOUSE, New York City.

The dry goods trade presents to one not familiar with the cause, a condition of affairs which, if not unique, is at least extraordinary. In all other trades and kinds of business a contract, whether verbal or written, is still a contract with all the

word implies. In the dry goods trade a contract appears to be such only in the event that both parties find it to their mutual convenience to acknowledge its existence.

From the earliest times the law of contracts has been recognized and upheld, and the observance of a contract is the foundation stone upon which the whole of our business structure is built.

The capitalist, the farmer, the producer, the consumer, and business men in all branches of enterprise are daily entering into relations with each other, which are undertaken upon the assumption that each party to the contract will live up to his portion of it, and should either fail to do what he has agreed to do, the law compels the offender to make restitution to the party aggrieved.

Why should the dry goods trade be conducted upon different lines?

The conditions in this trade are not dissimilar to that of any other, and the law that is applicable to contracts made by the banker or the broker is the same as that which can be invoked by the buyer and seller of dry goods.

If a man gives an order for a thousand pounds of sugar, at a certain price per pound, it is presumed that he expects to take what he has contracted for, and if he does not, the seller compels him to accept the same; on the contrary, if a man gives an order for a thousand yards of material, at 50 cents a yard, he gives it apparently with the mental reservation that he will take it upon two conditions: First, that he cannot buy elsewhere and before the time of delivery, for 40 cents, goods that will answer the same purpose as those for which he has contracted to pay 50 cents. Second, that when the time of delivery comes he will take only as many of the goods as he can use, and that may be a thousand yards or five hundred yards or none, as may best suit his interests.

Should he ascertain that he can buy them cheaper, or should he see fit not to receive entire order, he simply cancels the order in whole or in part, and leaves the seller with the goods on his hands.

Whose fault is this? Is it the mills, is it the commission house, is it the selling agency's, or is it the purchaser's? The blame must be laid somewhere.

The mills are naturally, continually pressing the selling agent for orders, so that their plants shall not lie idle. The commission house is equally interested in large sales, upon which its commissions is based The selling agent is between the two horns of a dilemma. On the one hand he is being continually prodded by his mill for more orders. On the other hand he hesitates to send in too large orders to his mill for fear of cancellation.

While the buyer, secure in the knowledge that he will not be called upon to live up to the terms of his contract, gives orders greatly in excess of the quantity he can use.

Another cause of this unsettled condition is that the selling agent frequently sells goods which he knows it is beyond the power of his mill to manufacture. In other words, although the mill is sold up on a certain line the agent still continues to take orders on that line.

Presumably this is done with the expectation and, indeed, the hope that some of his other customers will cancel their orders, and thus afford him a chance to fill all orders at least in part.

It thus appears that the root of the evil lies in the fact that cancellations of orders once given are accepted as a matter of course by the seller.

THE REMEDY.

There has been in existence from early times a statute known as the Statute of Frauds and Perjuries, and this statute of English origin, has become a part of our law. In brief, it provides (so far as is applicable to the subject under discussion) that no contracts for the sale of merchandise shall be enforcible where the amount involved is over Fifty Dollars, unless there has been a part delivery and acceptance under the contract, or unless there has been some memorandum in writing made, signed by the party to be charged.

This statute, originally intended as a safeguard against unscrupulous sellers who might claim that a certain contract of sale existed and perjure themselves to prove its existence, has become a shield in the hands of equally unscrupulous buyers, who enter into contracts of purchase of goods, at a certain price and secure in the knowledge that they cannot under existing conditions, be compelled to perform owing to the protection of the statute, decline to fulfill and when called upon to do so, say to the seller, "You have nothing in writing from me to prove the contract and I have not accepted any portion of your goods and you cannot hold me to the bargain." Under the circumstances the mill or other producer is helpless.

The impression is prevalent throughout the trade that the mere receipt of a "copy of order" by the buyer binds him to accept the goods and creates a written contract. Such is not the case. The statute provides that the memorandum in order to be binding must be signed by the party to be charged; in the majority of cases this is the buyer. It is not necessary that either party shall sign any printed contract or form. The contract may, and in many cases is evidenced by letters passing between the parties in reference to the particular transaction, but such letters in order to form a valid contract, must contain all the material terms of the contract, such as quantity, quality, price, terms and date of delivery. If any of these elements is lacking in the correspondence, the memorandum is not such a one as satisfies the statute, unless by the terms of the correspondence it is clear that the particular order in question was given for the same quantity of goods and upon the same terms as other and previous orders between the same parties.

Going upon the assumption that the seller has acted in good faith, and intends to deliver in accordance with his contract, he should send for the buyer's signature with each "copy of order," a printed slip referring in terms to the particular "copy of order," and acknowledging its receipt with a request that the buyer sign the slip and return the same to him. This slip the buyer should sign and return to the seller, thereby acknowledging receipt of the "copy of order" referred to therein.

(Continued on page 199.)

CORRESPONDENCE AND NOTES

Upon Textile Topics At Home and Abroad.

INCREASING THE CAPACITY ON A LARGE JACQUARD MACHINE.

BY JEAN PAUL.

Pressure or split harness are used in weaving very fine damask goods where extremely large patterns are desired, two or three threads being drawn through one mail edge, and occasionally the number reaches eight. The mails are made with a number of eyes to correspond to the number of ends that are to be used.

An increase in the number of ends placed in the mail eyes increases the capacity of the machine proportionately. Sometimes two, three or four machines are connected together which necessitates the making of a very large pattern. It is impossible to make as clear an outline on the figure with this form of harness as when the so-called full harness is used. In this way where one hook controls one thread in the pattern, there being several threads in one mail eye, the outline of the figure is determined by that mail eye. Harness shafts are placed in front of the comber board, the number being determined by the number of ends in a mail and the ground weave of the design. The extra harness are to weave the ground work. It can be readily seen that if some division was not made of the ends in the mail it would be a very coarse weave. Fig. 1 shows how that division is made.

The design calls for an eight-harness satin weave, so that eight shafts will be required at the front of the comber board. This extra harness has long eyes, about half an inch longer than the height of the jacquard shed. The eight threads that pass through one mail are drawn single through the shaft harness and straight down. This will generally cause every thread to be individual in the ground harness, although there are eight in one eye of the jacquard. The capacity of the machine is multiplied eight times so that an 800-hook machine would make a pattern of 6,400 ends.

The design is painted on design paper, but without ground weave, as this is controlled by the shaft harness. Several picks of filling

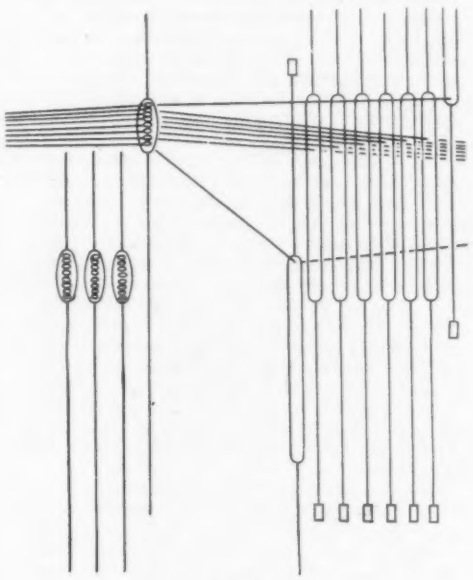


FIG. 1.

are placed in the cloth from one lift of the figure or one card; the number of picks for one card being determined by the structure of the fabric. The less the number of picks of filling to one card and the less the number of ends in one mail, the finer will be the outline of the figure. The shaft harness change for every pick in regular satin or twill order according to the weave, one harness being raised, another depressed, the others half way. The harness that is raised

will form the ground figure, the harness that is depressed will tie the figure yarn to be raised. The shaft harnesses are generally raised by the jacquard, two hooks being used at each end of the shaft. The card from the two hooks are attached to a small wood pulley, this in turn being connected to the harness shaft. When the hooks are down the harness is at the bottom shed. Lifting one hook raises the harness half the distance; by lifting both hooks the harness is raised to the top shed, as shown in Fig. 2.

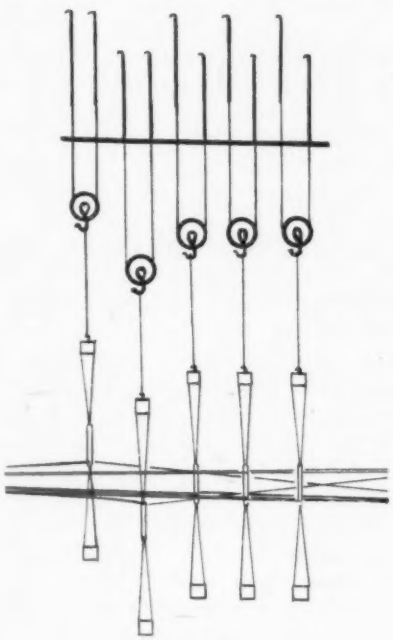


FIG. 2.

Considering the distance the harness is from the reed a very small shed is necessary. The additional strain on the yarn from the use of the shaft harness necessitates as small a shed in the jacquard harness as possible. The yarn must be of very good quality.

SPLIT HARNESS.

This form of harness is practically a pressure harness, but of smaller capacity. Fig. 3 illustrates how the capacity of a machine is doubled. Two couplings are attached to one harness thread and hook, so that when one hook lifts two threads are lifted also; the threads are frequently doubled in each mail eye. This arrangement would make a coarse weave, but to divide the threads in the ground weave, rods are passed through the upper portion of each row of couplings. These rods are operated by cams or special hooks in the machine. In this way single thread, plain twill or satin weaves can be made.

TWILL MACHINES.

These machines perform practically the same work as the pressure harness, but on a smaller scale, and without the use of the shaft harness. On a single action machine that would ordinarily have 12 rows of hooks has 24 rows, when fixed with the twilling motion, but there are only 12 rows of

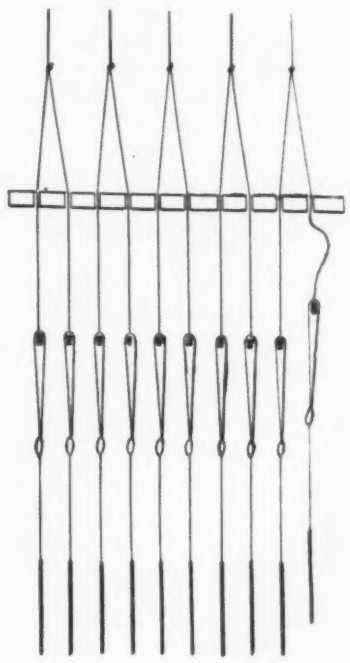


FIG. 3.

needles, one needle controlling two hooks. Separate harness threads are tied to each of the hooks, but as one needle controls both hooks, the two threads would weave together, making a coarse weave. The twill-

ing motion works the threads independently in the ground weave and in the tying of the figure.

Special hooks are placed in the machine alongside the regular ones at each end of the long row. These hooks are connected to the bar that passes through each row of harness near the junction of the neck card, so that practically each row of hooks can be operated as if they were regular shaft harness, and a straight twill or satin weave cloth can be woven by the twilling motion without jacquard cards.

The grippe blades are made so that they can be turned out of the way of the regular hooks, but in the path of the twilling hooks. The blades are controlled by small iron bars connected to the blades according to the weave. If for plain weave the bars would be connected to alternate blades; for four-end twill to the first, fifth and so on; for eight-end twill or satin to the first, ninth and so on. Eight connecting bars would be required. The bars are operated by a small cylinder on which notches are placed according to the weave desired. The design is placed on design paper without the ground weave, this being formed by the twilling motion. When the jacquard lifts the figure, a small notch moves the grippe blade so that a certain row of hooks is left down for binding, whether plain, twill or satin weave. A larger notch presses back the blade so that it lifts a shaft or bar hook that will raise a row of harness according to the weave. Either the cylinder remains in contact with the needles for two or more picks, or is prevented from turning for several picks. This motion not only doubles the capacity of the machine, but saves much time in making designs.

In Aachen, Germany, the hours of labor in the textile mills are generally 10 per day. The usual division of the day is as follows: 7 to 8; pause to 8.15; 8.15 to 12; pause to 1.30; 1.30 to 4; pause till 4.15; 4.15 to 7. On Monday morning work begins at 8 and on Saturday it ends at 5.30. Several mills work one to two hours less, but others work from 64 to 68 hours per week.

LABOR CONDITIONS IN GERMANY.

BY JAMES STRAND.

Circumstances lend immediate interest to all that concerns the cost of textile production in Germany. Tariff revision prospects and the pressing question of the valuation of German imports, render it intensely important that each American manufacturer should recognize how he stands in comparison with his German competitors. He needs to know the truth whatever that may be and in a matter of this kind the incontrovertible truth is none too easy to get. Believe the German manufacturer and his help is liberally paid and most comfortably situated. Believe the Social Democrat and the German mill-operative is among the most wretched of creatures. One cannot implicitly accept the unsupported testimony of either and there is no need to do so.

German conditions have been investigated by third parties, of whom one is Dr. Arthur Shadwell, author of "Industrial Efficiency." Within the last few months a body of six English workmen (the Gainsborough Commission) have been through Germany on a tour of inquiry. All accounts show that the pay of the German workman has improved, that rates vary by districts widely and that the standard of comfort is anything but uniform. Unmistakably they indicate that at best German wages are low, German rents high and German food dear. If the German workman is spared the agony of insufficiency that is because of the excellence of his own management, the general continuity of employment and his contentment with conditions that do not satisfy those who breathe freer air. The saying that pay is improved is borne out by declarations like that of an employer, Herr Geheimrath Hermann Vogel of Luzenau: "Something like 50 years ago, when I was a boy, the normal rate for Chemnitz weavers was 75 cents a week for a woman, $1.50 for a man. Wages rose to $2.25 and $3 and now instead of $1.50 we pay $3.75—an increase of 150 per cent.!" From Chemnitz, and Saxony in general, come a large proportion of America's imports from Germany and Herr Vogel's

words tell why certain woven productions are cheap. He is a maker of plain wool and mohair goods, of velvets and plush, table-covers and furniture. The deputation of English workmen ascertained that male weavers earned in his mill between $4.50 and $6 and a few exceptionally good ones even $7.50; girls from $2.50 to $3.75 and the best as much as $4.50 weekly.

Saxony is notoriously the area of low wages and poor living, and of industrial areas it is perhaps the worst in Germany. This is not to say that no lower rates than are named above are paid. In the Saxon town of Crimmitschau, for example, dyehouse men are valued at $3.65 to $3.75 a week, but in rural High Germany such have been obtained for $2.50 or $2.60 a week and that with no payment for overtime. Again in Thuringia, where home-workers abound, some of the world's worst examples of sweating are noted and not alone in the toy, leather and clothing industries, but also in the woolen trade. In the mountains about Apolda, Stadtsulza and Eckhardtsberga needy people work at all rates down to half a cent per hour and the infamy of these conditions enlightened Germans very keenly feel. One has no right to accept this slavery as representative, albeit a Home Industry Exhibition in Berlin last year gave the best proof of its existence. The assertion that German wages are low rests on no picked examples of extremes.

The Gainsborough Commission received from the firm of Krahnen & Gobbers of Crefeld, owners of the largest silk mill in that city, information as to the payment of their men. The average for men is put between $4 and $4.50 and out of 600 and more employed only four or five take home $7.50. Women in this mill get from $3.75 to $4.50. Crefeld home workers, weaving material and designs supplied, on looms which are their own property, make from $4.25 to $4.50 and the wife by assisting makes $3. The material is largely for cravats and scarves and a whole family working in the mill, or at home, may earn in total from $15 to $17.50 in a week.

Dr. Shadwell,—an impartial Englishman with no case to color or theory to support,—found it to be the rule that in America general wages are nearly twice as high as in Germany.

Shadwell's comparison of earnings of cotton weavers is flattering to Germany because he has accepted the highest rates and excluded the lowest in making his calculation. Taking English earnings as the base-line, this is how the ratios stand:

Cotton Weavers.

England	100
Germany	93
United States	121

In the woolen trade the contrast is sharper:

Woolen Weavers.

England	Females, 100; Males, 100
Germany	Females, 77; Males, 80
United States	Females, 177; Males, 135

To understand the international position one has to realize that a woman weaving woolens in America draws wages equal to the combined pay of a sister in England and a cousin in Germany!

A natural inquiry is about the number of hours worked. German Factory Laws prohibit the employment of women for longer than 11 hours on week days and 10 hours on Saturdays. The effect of the restriction is to create a normal working week of from 57 1/2 to 60 hours. The precise time varies, as specimen weeks will show. A Crefeld silk mill runs 58 1/2 hours in summer, 58 1/4 in winter; a Chemnitz knit goods factory 61 1/2 hours summer, 60 1/2 hours winter; a cotton mill at M. Gladbach 57 1/2 hours the year round; a woolen mill at Elberfeld 62 hours. Operatives, for the most part, decline to work before 7 a. m., at all events in winter, and this pushes the hour for leaving work late in the day.

Low as are wages, dear as is food, the German—as any one who sees him knows—believes in big eating and indulges his appetite as freely as possible. He is not averse to monotony in the composition of his meals and not very seriously concerned over their nutritive value. Beef which has been

boiled for soup contents him for his meat-meal. Horse-flesh he appreciates as a change diet when penury does not oblige him to adopt it exclusively. But of animal food the basis is pork and like all other meats in Germany, pork-prices have been advanced hugely. It is State policy to foster agriculture as well as manufacture and to make Germany, so far as may be, self-supporting in food supply. To the consternation of industrialists and hungry, ill-paid working men, scales of duty and sets of restrictions have been enforced within the last two years that have made living costs greatly higher. To this cause may be attributed largely the strikes which still occur by hundreds and the protestations of manufacturers who cry that Protection is ruining them. Official Germany pursues its policy unmoved—convinced that the end will justify the hardships.

The compulsory insurance provision is a mitigating circumstance in the German's life. He pays, according to his earnings, between 3 1/4 and 9 1/2 cents a week, or some 2 per cent. of his wages and thus qualifies at 70 for an old age or sooner for an infirmity pension. After 35 years of payment—which is the average of contributions—a man gets an annual sum between $28 and $57 for old age, or between $40 and $90 for infirmity. In amassing the fund employer, employed and State co-operate and its existence renders the workman proportionately better off. It is the case too that large employers in Germany experiment in forms of welfare work which does not invariably earn the gratitude of the beneficiaries. Residential homes have been built in Saxony for single girls, who have declined to make use of them. Workmen's dwellings erected by employing firms arouse the suspicions of the Socialist element that is always strong in the country. Coffee and meals are provided at cost in this place and the firm organizes a burial fund in that, or a choral society or endows some recreation rooms. Some go farther and enjoy more of the confidence of their people than others. But in general it is not palliatives that German workmen want.

Their pill is gilded but it is bitter in the mouth, as the interminable succession of strikes in textile Germany shows. From end to end of the Empire discontent is manifest. The workingman when not actively on strike is "passively obstructing" in the interests of such as are. Small and grudging advances are gained but none commensurate with the enhanced cost of supporting life and none which puts the German on the economic footing of the American or even the British mill operative.

ENGLISH NOTES.

(By Our Special Correspondent.)

General exports decline still and unemployment rests serious, but we are not without brighter signs. The steel trade is better, building is brisker and orders for textiles from non-industrial British districts are not bad. Wool is remarkably firmer and the nibbling buying of bright goods for America and of worsted yarn for Germany are counted to the good. The open chance of a spinner's lock-out over a 5 per cent. reduction in wages infuses no life into the flat markets for cotton. Reports tell that there is still a heavy weight of dearly bought cotton cloth unconsumed in the East.

* * *

All the heavy woolen chambers call for apologies from the Canadian Manufacturers' Association. With superb indifference to truth the Association has said our tweeds are "garbage pulped and rolled out to look like cloth," are made from "rags and rubbish from the most disease-infected slums, . . . cobwebs, floor-sweepings and garbage of all kinds." Admission of the fabrics into Canada is "little less than a crime." Yet the Canadian mills are customers for these same shoddy-blends and the Association is presumed to know that after washing, carbonizing, dye-stripping and dyeing the original rag is as clean as surgical-dressing. The Association has no room to talk of crime; it is playing with matches inside a magazine of powder.

* * *

Textile manufacturers are now expecting to receive circulars like some sent out to the

indignation of metal-traders in Birmingham The U. S. consul asks on behalf of the tariff revising Ways and Means Committee for certain intimate particulars, viz: The name of the establishment, the article produced, the costs of labor, material, officials and clerks, fuel, supplies, repairs, taxes, interest, depreciation and insurance. There are requests for a further description of the article, for particulars of the total wages paid to men, women and persons under 16. In Birmingham the letter has created a sensation.

Regarding the circular critically, some people are wondering what can be the earthly good, either to Congress or themselves, of disclosing such information. If they give exact answers the figures will cover such varieties of fabrics as to be uninformative to anybody. Owing to differences of account keeping costs of one item in one mill cannot be fairly compared with costs ascertained after the system prevailing in another mill. Manufacturers are told—although not just in so many words—that by making costs look high they will promote tariff reduction. This proves no great temptation, however. Ordinarily the particulars desired are not to hand in the form prescribed, the request is from a foreign source and compliance with its terms may for all he knows be to the manufacturer's disadvantage. The manufacturer is inclined to say, "Give me particulars from American mills first and then I'll think about it." Thinking about—and incidentally sneering at the supposed impertinence of the communication are the total results so far at Birmingham.

* * *

Wool combing employs in Bradford 5,000 and odd people chiefly at inadequate wages and involves the use of certainly 1,200 combs. The statistics of the trade are not quite fresh, but the two principal combing companies have a capitalization of some $6,000,000. There are private concerns besides and some spinners have combs so that an idea is obtainable of the extent of the industry. Bradford is the nursery of English Socialism and a Socialist member of the City Council now proposes "as a step in the direction of the betterment of the common people" that the municipality acquire "ownership and control of the wool combing industry" of the district. The matter is coming to a vote and in view of all that has happened to combines and private concerns in this keenest of cutting trades this invitation to civic bankruptcy ought to be interesting.

* * *

Some 1,700 offers to lease foreign-held patents have been advertised within a few months and it has been already explained that these represent endeavors to avoid the establishment of British works. But manufacture is being transferred to England in a number of cases, as may be seen from this list of firms in addition to that published in the September issue:

Deutsche Waffen & Muintions (rifles) works (probably Wales)
Buffalo Specialty Co. ..... works London
Clinton (Mass.) Wire Cloth Co. works (probably Cheshire)
Stoley Electrophone Co. (Chicago) ($300,000 plant) works Coventry
Pacific Electric Heating Co. (Ontario) works Coventry

Estate agents say that the number to date is certainly thirty German and American concerns, some of which, like the Stolz Co. of Chicago, intend to manufacture here for the export market. Already some are asking for remissions of local taxation which is hardly possible.

* * *

Particulars have been given of the ruin of a new steel boiler by feed-water into which ammoniacal liquors from a suction-gas plant had escaped. A second instance gives warning to those who bleach by sulphur. The boiler at a blanket mill has had its tubes eaten out by the product of sulphur fumes. Sulphur di-oxide gas leaked from the stove-house and fell into the adjoining mill dam where it entered into solution. Thus sulphurous acid formed which oxydized quickly to sulphuric acid and with this dilution the manufacturer had been raising his steam.

For auxiliary power in out-buildings, where the power required is low, water-motors of the triple plunger type are finding some mill employment. For a singeing plant in a Yorkshire mill it was found possible to install the motor complete for less money than pipes could be laid for steam. The head of water in the town main suffices and the outflow serves for boiler duty.

* * *

A Leeds chemist, W. McD. Mackey, is inventor of a useful arrangement for clearing dye waters, shown in the accompanying illustration. The precipitant is lime used in an

AN ARRANGEMENT FOR CLEARING DYE WATERS.

especial manner and a plant costing $2,000 is constructed to treat 30,000 gallons daily at an inclusive cost of $1 a day. As arranged at Batley the dyewater is lifted to a high level tank capable of holding half the day's supply and into a compartment of this two or three pailfuls of lime are thrown daily. From the tank the fluid passes in at the bottom of a tilted cylinder (an old 30 foot boiler, 8,000 gallons capacity) and it siphons out from the top. This cylinder fills, sludge accumulates in it and the effluent filters through its own precipitate. From thence the water travels again up hill, through a coke filter also improvised from a boiler. The effluent is clear, slightly alkaline and sometimes colorless. A ton and a quarter of the wet precipitate is removed once a week.

For automobile cloaks the forthcoming novelty is shot silk in dark colors, e. g., black and crimson, green and brown. The silks are French, cost about $2.50 a yard and are rainproofed and made up in this country. Trade is good still in the drab worsted paramattas that are so extensively used for rubber-proofing and a fair quantity of cotton for proofing are being dyed.

The question of khaki dyeing being of present interest it is noted that for the waterproof trade khaki-like shades are got by direct colors, usually by diamine yellow. For so-called "fast khaki" colors of good permanence are dyed with catechu, chrome and iron or with cachou de Laval. The English dyers, whose khaki most nearly approaches the fastness of Leemann & Gatty's special dye, employ some catechu. The Leemann dye has apparently none and would seem to be a complex of oxides of chromium and iron alone. In dyeing these light shades there are always troubles over stains and substantial deductions from dyers' bills, running to 20 and even 40 per cent. are heard of.

* * *

British piecegoods merchants trading with the East are more profoundly disgusted than ever over the "survey" system. Goods sent to India and China which are alleged to be inferior to sample are adjudicated on by a couple of claim-surveyors appointed by the local Chamber of Commerce. They are employes of European importing houses who from a warehouse experience know a little about cloths; in some instances extraordinarily little, it is believed. They are perhaps chary of offending native dealers who are their customers, at all events their awards excite indignation. To take a specimen instance, a dealer asserts that linings, not worth $3 a piece, are tender and he claims an allowance of 15 per cent. The surveyors deliberate, try a single piece and decide that the case merits an allowance of 4 per cent. The shipper has to pay the survey expenses which, with cablegrams, bring the loss up to 10 per cent. Picture his feelings, knowing that no man in Asia can judge to 4 per cent. the correct value of dyed cottons at 5 cents a yard. This instance is representative of many.

THE UNION OF FRENCH TEXTILE ASSOCIATIONS.

(From the Official Manual of the Union.)

HISTORY.

It was in November, 1899, at the suggestion of R. S. Carmichael, that the idea of an association comprising the different branches of the French textile industry was brought into prominence for the first time. A commission composed of MM. Carmichael, Touron, Le Blan and Ponnier, met on May 16, 1900, and drew up a plan of operations. This outline was only provisionary and had for its object to point out the need for closer association between the separate branches of the trade, which were now represented by isolated organizations. At that time there were a number of bills pending before the Chamber of Deputies affecting the textile industry, threatening an entirely new jurisprudence for the trade. This situation emphasized the necessity for some means by which textile manufacturers could exchange views on all common questions, study the proposed laws and make known to the government the opinions which they had formed from practical experience. The members of the commission began work immediately and on June 27, 1900, twenty-two manufacturers from widely separated districts in France met at the residence of M. Carmichael. On that occasion M. Touron submitted the by-laws which were later adopted for the Union.

It may not be out of place to recall the reasons which led to a Union of Associations instead of an association with a membership composed of firms and individuals. The textile industry is essentially diverse and its branches are necessarily represented by their special associations. These associations representing sections of the industry, strangers yesterday but closely connected today, find the Textile Union to be the natural exponent of their interests on that common ground to which they are drawn by industrial and fiscal questions and from which questions involving a tariff on imports are excluded. Thanks to this wise system of decentralization the Union is thus the true representative of the textile industry, which in all its various forms is permeated with a system of maintaining national production at the high standard already reached.

MM. Carmichael, Touron, Berger and Roy canvassed the industrial centers in 1900 and 1901 and found that the proposed union of textile associations met with much encouragement from manufacturers. On May 28, 1901, the Union held its first session with twenty-two associations recorded as members: today there are sixty-six. Following are the by-laws of the organization:

Article 1. The Union of French Textile Associations has for its objects:

1. To protect the interests, moral and professional, of the textile industries and their collaborators, engineers, directors and other employes, to the exclusion of questions connected with free trade and protection.

2. To concentrate the work of the association members and to represent them under all circumstances in which common action is considered necessary.

Art. 2. At the head of the Union is placed a permanent Committee consisting of a delegation from each association. The number of delegates from each association is determined in the following manner: For 20 members, 1 delegate; from 21 to 40 members, 2; from 41 to 80 members, 3; from 81 to 120 members, 4; above 120 members, 5. In addition to these delegates elected by the respective associations, the president of each association will be the ex-officio member of the committee.

Art. 3. The Committee will select from its members a Bureau consisting of the following members: President, Vice President, Treasurer, Secretary, Asst. Secretary.

Art. 4. The members of the Bureau are elected each year by separate ballot and by a majority of all the members present. In case a second ballot is necessary, an election is by a plurality vote. If two members each receive the same number of votes, the oldest is declared elected. The retiring members are eligible for re-election.

Art. 5. The president presides at the sessions of the Committee and at the general

sessions. He receives all requests for admittance to membership and submits them to the Committee at its next session. The vice president assists the president and takes his place in case of a vacancy. The secretaries have charge of editing and publishing the reports of the meetings, which are approved and signed by the president or a vice president.

Art. 6. The financial resources of the Union are supported by assessments of the association members, the amount being fixed by the Committee.

Art. 7. The headquarters of the Union is at Paris.

Art. 8. The Executive Committee meets monthly during the year, except during the months of July, August and September. The Committee fixes the exact dates of the sessions. Special meetings can be held when deemed necessary.

Art. 9. The functions of the Committee consist:

1. To classify all information bearing on questions of general interest. To secure the advice of the association members and to make recommendations in return.

2. To advise the association members of all new questions affecting the textile industry.

3. To take charge of all work of the Union, particularly in the form of petitions, reunions and the sending of delegations to the government or to parliamentary committees.

Art. 10. The Bureau is convened by the president eight days before each session of the Union in order to decide upon the order of business. This session of the Bureau is also held to decide as to what questions shall be submitted by the members to the general session.

Art. 11. Action by the Committee can be decided upon by a majority vote. In case of a tie the question is decided by the vote of the president. A secret ballot is obligatory when requested by one-quarter of the members present.

Art. 12. A general reunion to which all the association members are summoned is held during the third week of each year. At this session the Bureau presents a report of the work for the preceding year. This report is subject to revision by the Executive Committee before being presented. The annual assembly of the Union is held in the afternoon of the same day, for the purpose of receiving and approving of the financial report and budget presented by the treasurer.

Art. 13. The election of president and all members of the Bureau is held at the session of the committee which follows the general assembly.

Art. 14. In case of necessity the executive committee can convene the members of the association in extraordinary session.

Art. 15. All associations of the textile industry that desire to become members of the Union must:

1. Agree to conform to existing by-laws.

2. Address its request to the president of the Union who will submit it at the first session of the Committee.

Art. 16. The by-laws can be amended by the Committee at a session held for that special purpose. All amendments to the by-laws must receive a vote of two-thirds of all associations represented at the reunion.

The following partial list of the associations that are now members of the French Textile Union will show the diverse character of the organizations that have been federated by the Union:

Norman Association of Cotton Weavers.

Norman Association of Cotton Spinners.

Associated Chamber of Knit Goods Manufacturers.

French Association of Flax, Hemp and Tow Spinners.

Association of the Jute Industry.

Saint-Quentin Yarn and Cloth Association.

Lyons Silk Association.

Parisian Textile Association.

Association of Sewing Thread Manufacturers.

Lyons Association of Dyers and Finishers.

Association of Piece Dyers, Finishers and Printers.

Roubaix-Tourcoing Association of Manufacturers.

Rope and Twine Manufacturers' Association.
Woolen Spinners' Association.
Roubaix Worsted Combers' Association.
Lyons Silk Merchants' Association.
Silk Throwsters' Association.
Lace Manufacturers' Association.
Asbestos Manufacturers' Association.
Carpet Manufacturers' Association.

WOOL CARDING AND CARDING MACHINERY IN EUROPE.

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The purpose of this article is to give a brief description of woolen carding machinery and methods generally employed in Europe and also to give data regarding speed and production of our latest machinery.

It will be of interest to know how and under what conditions the small spinner works. We will start with the picking room and describe what we find in the smaller spinning mills where the Continental system of woolen carding is in use.

This room generally contains one machine only, either a "Reisswolf," i. e., tearing picker, or a "Krempelwolf," carding picker. The "Reisswolf" is the ordinary mixing picker, which is in general construction the same in all countries.

The "Krempelwolf" performs the same duty of opening and mixing the wool, but in a more moderate fashion. This machine is somewhat similar to the English tenter-hook Willey. The feed rollers have crooked steel teeth which hold the wool well but at the same time allow it to be drawn through without tearing or breaking the staple as does the mixing picker.

The cylinder also has crooked steel teeth and takes the wool from the feed rollers to the first worker, which hold the larger locks while the smaller pass through. The strippers are placed behind the workers, have straight teeth, taking the wool from the workers and giving it back to the swift. Thus the wool passes the three pairs of workers and strippers and is taken out of the machine by the fancy. The fancy has six lags supplied with strong teeth, in front of which are strips of leather.

The teeth and leather strips of the fancy enter into the teeth of the swift, and on account of their greater surface speed take the wool of the swift and throw it out into the room. It is advisable to have a wooden case about two yards long fixed to the outlet of the picker. The reason for this is that the wool, if allowed to fly out into the room, is apt to separate according to the weight of the different kinds.

Ordinarily only a mixing picker is used. The reason for this is that the bulk of the material used for the spinning of woolen yarn on the continent is offered for sale to spinners in a clean condition ready for the mixing picker. The shoddy makers generally wash the better grades of shoddy even after being pulled, and nearly all kinds of rags used are thoroughly washed and dusted before picking.

The inferior grades of Colonial wools constitute the bigger part of the wools consumed by the woolen trade. These wools as a rule contain curro and other foreign matter, and there are quite a number of wool washers and wool firms who make a specialty of treating wools of this description.

The town of Mazamet, Belgium, the seat of the skin wool industry, may here be mentioned as an example of this trade. The wools treated here have even derived their name from the place, and are known throughout the woolen trade as Mazamet wools.

The manipulation, especially of the inferior grades, is done by concerns which contract for wastes of all description, treat them according to requirement, and sell them to the spinners. The European spinner has the choice of a wide variety of prepared stock practically ready for the mixing picker. Large spinning mills as a rule have well equipped preparing rooms for preparing their own stock.

For illustrating the equipment of a small mill I will choose a Salon mill, spinning what the German calls "Vigogue" yarn, woolen spun cotton for the knitting trade. Following is a list of the machinery: One

vertical cotton opener, one mixing picker, four sets of cards, eight self-acting mules of 450 and 500 spindles each.

The production is partly commission spun, partly sale yarns, made of East Indian or China cotton, cotton knit pulled, cotton waste, 3 to 5 per cent. brown wool and occasionally batches with 50 per cent. of wool.

For a 5 1/2 run yarn the batch is made up as follows: 40 per cent. middling American, 40 per cent. Scinde cotton, 17 per cent. pulled maco knit bleached and 3 per cent. brown wool. The raw cotton is

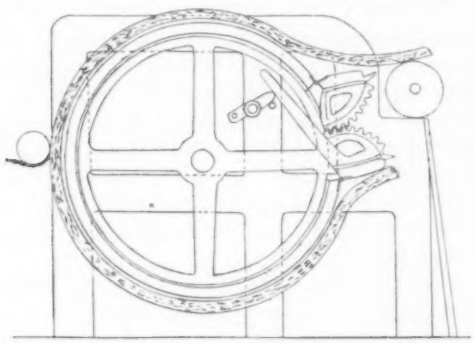


FIG. 1.

put through the opener, where remaining seeds and dust are beaten out.

In order to secure a thoroughly good mixture, free from specks, the brown wool is put through the first and second breaker previously to being mixed in the batch. In laying out the batch the cotton is generally put at the bottom, then the pulled maco knit, another layer of cotton, and lastly the wool in three or four layers. It is advisable to run the wool through the picker once after being taken out of the bag. It is then easier to scatter it evenly over the batch.

Emulsion to the amount of 14 per cent. of the weight of the lot is sprinkled on the wool with a can, and care is taken to keep the solution off of the cotton. The emulsion is composed of 30 pounds cheap olive oil, 30 pounds olein, 80 pounds water and 1 pound liquid ammonia. It is stirred in an oil barrel or iron tank heated by steam.

This quantity suffices for a 1,000-pound lot. Care is taken to have the emulsion put on as hot as possible. It is prepared fresh for every batch. If a lot contains 30 per cent. wool or more, the wool is oiled separately, put once through the picker and then mixed with the cotton. In this case all of the oil is put on the wool and nothing directly on the cotton.

The batch is put through the picker three times. It is thrown up against the wall with a pole or hay fork, and then carried to the front of the picker again to ensure a uniform mixture.

A set of cards consists of three separate machines. The swift of the first breaker makes 185 revolutions per minute; the swifts of second breaker and condensing card, 175 revolutions per minute. Diameter of swifts, 50 inches; diameter of doffers, 28 inches; diameter of workers, 7 1/2 inches. Width of cards, 70 inches. Every card has 5 pairs workers and 5 strippers.

The first card is supplied with a "Bohles" self feeder, feeding the wool automatically

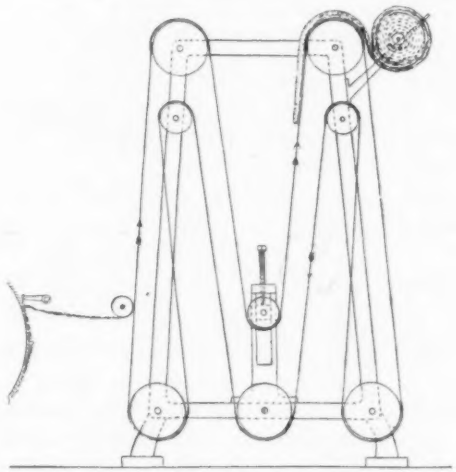


FIG. 2.

to the card, but without weighing, and a drum, called a lap breaker, Fig. 1, which, after a certain number of revolutions, breaks the lap up and rolls it on the floor. A certain quantity of these laps are now put on a weight, weighed and laid on the feed apron of the second breaker.

The length of the laps corresponds with the width of the feed apron on the second breaker, and as the laps are put on lengthways across the feed apron, the fibers are delivered into this card at right angles to

the direction in which they left the first breaker.

The film of wool from the doffer of this card is led on to a long, endless cloth called a long lap feed, Fig. 2, where a long lap is formed.

When one weight has been put through, the apparatus is brought to a standstill by throwing out a clutch, the lap torn across, rolled up on a pole and the next weight put through.

The long laps are fed double to the condensing card, that is, two rolls are laid on the feed apron of the condensing card at a time to secure evenness and a good mixture.

The condenser is a so-called leather tape condenser, where the film of wool is divided into narrow strips by leather straps running around grooved iron cylinders and leading rolls and carrying the ribbon of wool to the rub rolls.

The roving is here, as is always the case where cotton or half wool is carded, condensed by leather covered rollers. This method gives a softer and also a more even roving, capable of enduring more draft on the spinning mule. It also gives the yarn a better and more woolly appearance.

The condenser delivers 120 good ends of roving as a speed of 20 to 22 yards per minute. As this is a good lot we will say 21 yards per minute. This makes 1,663,200 yards in 11 hours. Supposing that the roving is 3 4/10 runs for a 5 1/2 run yarn, we will have a production of 306 pounds, less 5 per cent., for stoppages, 291 pounds per day of 11 hours, or 1,746 pounds in a week of 66 hours. In this particular case the cards are run one hour longer every day than are the self-acting mules, in order to keep up with the latter. Five per cent., or half an hour every day should be sufficient for stoppages.

When stock of this kind is carded the cards need stripping about twice a week and the condensing card should not be stopped more than half an hour for every stripping.

This system of carding was considered the best some ten to fifteen years ago, but now it is rarely found except in smaller mills. In the large mills it has been displaced by the more complicated modern system of carding, where the wool passes through the whole set automatically from start to finish. The carder has only to throw the wool into the self-feeder and take off the spools of roving. The old system has its advantages, however, for the small spinner. As every card is driven separately time is saved in stripping and grinding.

It is always arranged so that one card is ahead of the following. While one card is stripped the other two are running. It means a great loss of time to have three big cards brought to a standstill at one time. Three separate cards are adjusted more easily when changing the count of yarn or grade of stock. If the carder does his work properly the results obtained are second to none obtained by any other system. The drawbacks are that one tender has to be employed for every set of cards, instead of one tender for two sets of cards, connected by automatic feeds; and that careless or unskilled help will make bad work.

The first point, however, is of no great importance in Saxony where labor is cheap. With regard to the second, supervision is generally more effective in a small mill than in a big one.

It will be seen from the foregoing description that the number of doublings on this system is very great. First, the self-breaking lap drum, about 60 doublings; second, crossing on the feed apron of second breaker, then the long lap feed, 30 doublings; and lastly, doubling on the condensing card.

We will now consider the help employed. The small manufacturer or spinner is frequently his own boss carder, and also works at stripping, grinding, etc. The spinner's son is sometimes the second hand. They also have charge of the office work. There are one stripper, one boss spinner, four carders—women—three girls for every self-acting mule, twenty-four, one girl packing yarn, two picker room hands, one man tending cotton opener and working in wool storeroom and one girl spare carder and sweeper.

The working time for women and minors is 60 hours a week, but as the cards are run 66 hours, the women carders have an hour off alternately during the day, and the spare carder has to take their place. The number

of girl spinners, three for every mule, is rather high, but as the poor stock generally is spun to high counts and production on the cards pressed to the limit, the work generally runs badly. The girls have to be on the move all day and rarely get a chance to sit down.

When good lots are spun the mules have to wait at least one hour every day for roving. Although the work may run badly on the mules, the yarn produced is quite sound and even, free from thin and thick places or weak spots.

The requirements a woolen spun knitting yarn must meet are more exacting than those put on a weaving yarn, as regards evenness and roundness. That the yarns are good is proved by the enormous export business Germany has in these yarns.

The worst drawback by the use of short, cheap cotton is the seeds which, if not quite eliminated in beating or opening, fasten in the card clothing, necessitating a more frequent stripping of the cards and also more breakages in spinning.

When hard cotton waste is used it is nearly impossible to card out all the hard threads properly. Some will always come into the roving not quite opened up, and cause breaks in spinning. Five hundred to 1,000 pounds or more is usually put through the cards without stripping. If it was not for the seeds left in the cotton about twice the amount might easily be put through.

There are quite a number of small commission spinners especially in the large manufacturing towns in Germany, who have each perhaps one or two sets of cards and who usually hire room and power. In some instances the spinner delivers yarn to the weaver next door, who in turn sends the cloth to be finished and dyed at the finishing or dyeing works.

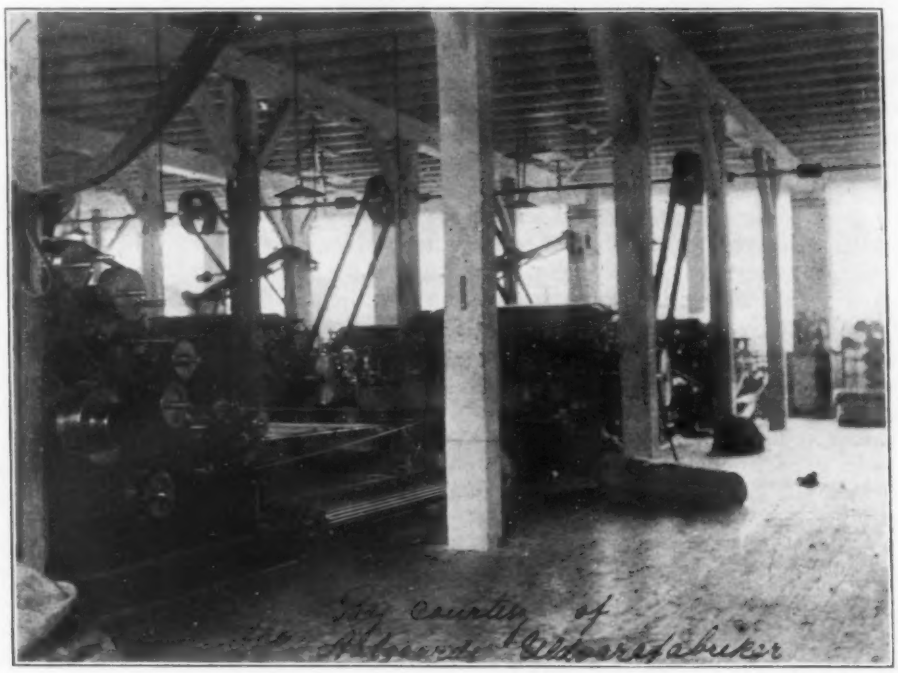


FIG. 3. THE CARDING ROOM OF A WOOLEN MILL IN NORWAY.

(To be continued.)

In certain districts of Edinburgh, England, the overcrowding is acute. The plan of ticketing houses has been adopted there. Ticketing consists in the affixing, outside the door of the house, of a metal ticket bearing the number of the house, its cubic space and the number of adults allowed to sleep in it.

Questions and Answers

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring ,not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the composition of yarns, analysis of fabrics, etc., we will charge the enquirer with the cost of the investigation.

Uneven Bleaching.

Editor Textile World Record:

In the caustic boil we have trouble with brown spots which the boil does not seem to strike, the cloth not being bleached evenly.

Chadwick (1019).

These brown spots may be due to several causes. The goods may be packed unevenly in the kier; in fact I think this is the chief cause of uneven bleaching. The goods should be plaited down level and not be allowed to fall in heaps. If the goods are put in the kier in a careless manner or in lumps it will be impossible for the liquor to penetrate the goods thoroughly. This will also cause the goods to be blown and tender in places if boiled long enough.

Another cause for this trouble is not having enough liquor in the kier. If the goods are boiled in a high pressure kier, care must be taken not to have too much material in the kier. When the goods are packed level and even and the blocks are being put in for packing, always leave a little space for the goods to swell before putting on the manhole covers. It is also important to have sufficient liquor in the kier. If there is not enough liquor brown spots will be noticed underneath the blocks. If the goods are boiled in the open low pressure kiers, no trouble can arise in bleaching except from uneven packing of the goods, insufficient liquor, or the goods being underboiled.

If the goods are boiled in the open kier, watch the plaiting of the cloth. Boil each kier the same length of time and see that the goods are well covered with liquor. If the spots still appear, watch another kier in the packing and give the goods one hour longer in the boil. I would not advise the use of stronger caustic until all other means have been tried. Delco.

"Chadwick" does not state whether he uses any soap or not with the caustic. It might be well to use a little soap and boil the goods at least 12 hours. If the brown spots still show after the bleaching, scouring and washing, it would be well to put the goods into a vat and give them a clear boil for one-half hour. Cool them off with two waters, give them a weak bleach and then scour. I do not think the cloth is properly boiled in the first place, and that is the source of all the trouble. Winthrop.

Uneven bleaching is nearly always caused by the improper treatment in the boiling process. The goods must be clean and free from all foreign materials before entering the kettle. In handling knit goods it is not necessary to give them a very severe treatment. If the caustic is boiled in a separate kettle and the goods are wet out evenly no brown spots will appear. If the cloth is put in the kier dry and cold water run in and the caustic added the goods will come out uneven and spotted.

The goods must first be run through hot water. After the cloth has been plaited down, close up the kier, open up the valves and let the steam blow through for about 15 minutes. This will wet down the goods and press out the air. Then fill up the kier by putting the hose to the waste pipe. See that the water does not get below the surface of the goods while they are boiling.

All knit goods require about 2 1/2 hours boiling at 5 pounds pressure. When the goods have been boiling this length of time, let the pressure down and flush kier before drawing off the liquor. This method will result in even work, if the kier and water is clean. If the boiling is to be done in an open kettle the water should be heated to 140° F. before the goods are put in.

In place of caustic a good alkali will do better work and make the goods softer. Get a good, clean bottom and the work will be satisfactory. Devon.

The brown spots complained of are no doubt due to uneven penetration of the boiling liquor. To remedy this trouble I would suggest dampening the goods and then boiling in an ordinary wooden kier. Care should be exercised in packing the goods uniformly in the kier. The latter is an important point. If the goods are packed solid in some portions and very light in others the liquor will naturally circulate more freely where the least resistance is offered. To eliminate trouble of this nature it is frequently found necessary to install an iron pressure kier. Palmetto.

Oiling Wool.

Editor Textile World Record:

We would like to obtain all the information possible as to the use of oil or emulsion on woolen stock to be carded.

Should the consistency of the emulsion, i. e., the proportion of the ingredients, vary in a mill according to the different stock it is using, or is it customary for a mill to use the same proportion of ingredients?

Are there a few standard proportions which could be given as suitable for the different kinds of woolen mill work?

What regulates the proper amount of emulsion to be used?

Are any better results obtained by using all oil instead of a mixture? Dalton (1025).

It is customary for manufacturers to vary proportions of the emulsions to suit the stock that is being carded.

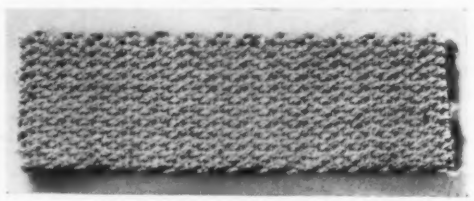
There are no standard proportions that could be given for the different kinds of stock. The materials used for woolen goods vary so widely that the exact proportions of oil and water can be determined only by actual tests. The amount of emulsion is regulated to produce the most perfect yarn with the least amount of waste.

Opinions vary widely among manufacturers regarding the relative advantages of using oil or a mixture of oil and water on wool. One of the disadvantages of using water is the evaporation which causes an irregularity in the stock. If effective means are taken to prevent excessive evaporation a moderate amount of water facilitates the carding process. Any water added to the stock in the picking room of course evaporates before it reaches the spinning process.

Machinery for Cotton Belting.

Editor Textile World Record:

What kind of a loom is the enclosed sample of cotton belting woven on and what does a loom of this kind cost? Lombard (1008).



WOVEN COTTON BELTING.

The woven cotton belting shown in the illustration is used in place of leather belting, It is woven on a loom weaving 20 widths at a time and which costs about $600.

American Textile Schools.

Editor Textile World Record:

Please give the names and locations of all the different textile schools in the United States. Erie (1004).

Question 1004: Following is a list of the textile schools in the United States. In some of them the instruction in textile manufacturing is but a branch of the school work: Agricultural and Mechanical Arts College, Starkville, Miss.; Agricultural and Mechanical Arts College, Raleigh, N. C.; Agricultural and Mechanical Arts College, Clemson, S. C.; Bradford Durfee School, Fall River, Mass.; Columbus Textile School, Columbus, Ga.; George School of Technology, Atlanta, Ga.; Lawrence Textile School, Lawrence, Mass.; Lowell Textile School, Lowell, Mass.; New Bedford Textile School, New Bedford, Mass.; Philadelphia Textile School, Philadelphia, Pa.; Rhode Island School of Design, Providence, R. I.; Texas Textile College, College Station, Texas; Technological School, Spray, N. C.

Density of Textile Materials.

Editor Textile World Record:

I would like to have some information regarding the density, that is, the pounds per cubic foot of textile materials in different forms, such for example, as cotton in the bale and in tightly woven cloth. I would also like to know the specific gravity of the fiber itself. Fiber (1017).

The density of cotton in its various forms, specially when baled, is governed wholly by the kind of bale and how baled. The following figure will give a fairly comprehensive idea of the range taken, and also how valueless any given density is, unless the character of the bale is indicated,

The common American bale—the style of "package" that has been the cause of so much controversy between the American shipper and the European buyer—averages 475 pounds, and occupies about 22 cubic feet, the "density" of which would be 21.6 pounds per cubic foot, or a "specific gravity" of 0.345 compared to water as 1.000. On a basis of 25 pounds per cu. ft., the specific gravity would be 0.400.

An Egyptian bale recently measured weighed 700 lbs. and occupying 15 cu. ft., the "Density" of which was 46.6 lbs. per cu. ft. and the specific gravity 0.745.

A bale from Pernambuco compressed to 400 lbs. per 10 cu. ft. has a density of 40 lbs. per cu. ft. and a specific gravity of 0.64. Another bale examined from Colombia, South America, weighed 550 lbs. to a volume of 26 cu. ft., having a density of 21 lbs. per cu. ft., and corresponding to a specific gravity of 0.336. The American round bale has an average density of 35 pounds per cu. ft., and a specific gravity of 0.56.

The specific gravity of the various textile fibers are given in the following table:

Cotton	1.50-1.55
Linen	1.50
Hemp	1.48
Jute	1.48
China Grass	1.51-1.52
Wool	1.28-1.33
Mohair	1.30
Raw Silk	1.30-1.40
Degummed Silk	1.25

The density of woven fabrics depends upon the weave, weight of yarn, etc., and can be ascertained only by making direct tests.

The density of wool can be calculated approximately from its specific gravity, using the various figures for cotton for comparison. A bale of Bagdad wool just measured gives a density of 42 lbs. per cu. ft., corresponding to a specific gravity of 0.672 (water = 1.000). Dumfries.

Advantages of Concrete and Wooden Tanks for Storage of Hot Water.

Editor Textile World Record:

What are the relative advantages of concrete and wooden tanks for the storage of hot water in respect to loss of heat from radiation?

Wheeler (1015).

For the storage of large volumes of hot water, this problem becomes a matter of considerable interest, in view of the probable great loss of heat by radiation from the exposed surface, and absorption of heat by the material of which the storage tanks are constructed.

Leaving for the moment the economic features of heat storage, and considering the structural side of the question, we will find that many advantages result from the constructing of tanks of re-enforced concrete, so put together upon suitable foundations that the possibility of leakages, due to cracks and fissures, is reduced to a minimum.

When very large volumes of hot water are to be kept in reserve, the storage tanks should be built with partitions, thereby dividing them into two or more equal compartments; but, of course, all of this adds to the area of the exposed or cooling surface.

As a rule large volumes of very hot water are not stored up for any length of time, so that, other things being equal, well made vats of heavy planking may answer the purpose better than concrete, although there is danger of one or more of the planks requiring replacing at most inconvenient times; this may be overlooked if the size of the vat is not unusually large.

As to the loss of heat from the same volume of water at a definite temperature, and

contained in two vats, one of concrete and one of wood, basing our opinion upon the relative conductivity of concrete and wood, we believe that the water in the concrete vat will retain its heat longer than that in the wooden vat. In this we leave out of consideration the loss of heat from the surface of the water exposed to the air.

We have recently seen a well made hot water storage tank of large size, built of reenforced concrete of first class construction, mounted on heavy iron uprights, provided with a steam coil, and which is said to be giving excellent results. Undue exposure is prevented by means of heavy wooden covers which serve as heat insulators. Such a tank, if well made, ought not to leak, and if, instead of being elevated on uprights, it is buried in the ground and covered, it ought to exceed in heat retaining properties, and in durability, any tank of corresponding size constructed of wood.

Beta Naphthol.

Softener for Cotton Yarn.

Editor Textile World Record:

We are boiling 2/26s cotton yarn in an open kier for 8 hours. After washing, liming and scouring, we soap and blue the yarn and then extract it. What softener should be used to make this yarn feel less harsh, and should it be used in the soaping? Warwick (1020).

I have found that the best cotton softener for bleached cotton yarns is sulphated castor oil. A pure article ought to be neutral or slightly alkaline with but a slight odor of ammonia. This mixes freely and forms a perfect emulsion with water. About 3 per cent. calculated on the weight of the cotton yarn will be ample, and may be applied with advantage to the soap and bluing bath.

Morocco.

The way this question is put would lead one to think that the liming and scouring is done after the boiling process. If the goods are being boiled before the liming and scouring, I would advise your correspondent to reverse the process, working the goods in the following manner:

First. Lime the goods, scour and wash well and boil off as usual. The goods can be assisted both in the boiling and soaping processes, providing the goods are not limed and scoured after they are boiled. The goods are softer after the boiling process than they are before and if a softener is put in the boil and the goods then limed the action of the lime will offset all the advantage obtained from the softener in the boil. It will therefore be seen that it is necessary to do the liming before boiling.

The following formula is a good one to use in the boiling process: Sixty pounds good prime tallow, 20 pounds resin, 50 pounds caustic soda. Dissolve the resin and tallow together in the kettle. When thoroughly dissolved add 8 gallons of hot water same temperature as the tallow and resin. Then add the caustic carefully and in small quantities, stirring all the time. When all the caustic is added boil until all trace of the grease has disappeared, then add boiling water to make 110 gallons. When cold it should be of the consistency of a good stiff jelly. If this mixture is not boiled enough it will not set, but will remain in the liquid form. If it is boiled too much it will separate. Use this in the boil at the rate of 1 to 1 1/2 per cent. of the weight of goods in the kier. The yarn can also be softened in the soaping, using soluble oil, cocoa substitute, glycerine soap, and several others that are on the market. I would advise the use of a good soluble oil to be used in the soaping with a little cocoa oil added if it is necessary to have the goods very soft. Care must be taken not to get the bath too greasy. Kenyon.

I have found a good olive oil soap to give good results as a softener. For 50 gallons, use 25 pounds of soap and 3 gallons of glycerine. Boil the blue in this solution, using about 2 gallons to 100 pounds of yarn. After washing out the yarn, lime in place of souring with an acid, putting the yarn in the sulphur house over night with 6 per cent. of sulphur. In the morning wash out the sulphur and the yarn will be soft and a clear white. I have used this method on knit goods that had to be stained and colored light shades, and obtained better and more uniform work than with the acid. Many mills would not use this method, but if the

lime is not removed from the goods no softener will have any effect. If the goods are free from all chemicals no softener will be needed. Devon.

Using 1 1/2 pints of Alizarine oil to 100 pounds of yarn will give a good soft grip to the yarn. It is better to use this oil with the soap as it will break up easier,

Winthrop,

Bleaching with Permanganate of Potash.

Editor Textile World Record:

I would like to have some information regarding the bleaching of union goods, cotton and wool, with permanganate of potash. Stevens (1018).

The bleaching of union goods with permanganate has not been entirely successful for the reason that the cotton contained in the cloth is always very liable to suffer in strength by the influence of the powerful oxidizing action of the permanganate, and also by the action of the acids necessary to complete the bleach.

Wool is quite effectively bleached by permanganate, the strength of solution ranging from 3/4 ounce to 2 ounces of permanganate to every 25 gallons of water. One German authority mentions a strength of "4 per cent." which for the above quantity of water would be nearly 133 ounces, and which is no doubt an error, but liable to cause serious trouble to the goods, besides leading to a condemnatory opinion of the process.

With a solution of say, 1 ounce to 25 gallons, there should be added about 1 per cent. of Epsom salts (sulphate of magnesia), the effect of which is to counteract the action of the caustic potash formed in the bath during the deposition of the peroxide of manganese, with the formation of magnesium hydroxide and potassium sulphate, conserves the strength of the wool fibers. The immersion of the goods lasts about one hour, taking care to have the material thoroughly wetted, then turning regularly for another hour, until the peroxide deposited appears to be quite uniform. The actual bleaching is accomplished during the depositing of this brown oxide.

The "clearing" is accomplished by passing the well washed material through a fresh cold bath made up with either bisulphite of soda or sulphurous acid and borax. Some recommend that this bath be heated to 125° F., but to the writer this seems to invite damage to the goods. After the brown coloration has been entirely removed the goods should be removed, well washed to remove every trace of acid, and then dried.

For union goods it is suggested to use a cold permanganate solution of 1/2 to 25 gallons of water, bleach until the pink color is completely lost, wash well, and give a sour in dilute sulphuric acid at 1° Tw., until the brown has cleared, then lift, and wash well to remove all traces of acid. This will give a basis upon which to work out a process for this type of bleach. Berwick.

Roller Cloth.

Editor Textile World Record:

Please advise us what 22 ounce roller cloth is used for? We understand that the ordinary weight for roller cloth is 16 and 18 ounces and we would like to know for what special purpose the 22 ounce cloth is used. Richmond (1024).

Twenty-two ounce roller cloth is now extensively used on drawing frame rolls for fine, long staple cotton; also on comber rolls and the sliver and ribbon lap machines when used on fine work. The object of using cloth of this weight is to give more of a cushion to the leather covering during the drawing of the thin film of delicate fibers, such as are found in long staple cotton. On some of the modern high production combers using very wide laps, a 24 ounce cloth is used on the detaching rolls so as to obtain a uniform and delicate grip upon the fibers during the detaching operation. Bolster.

Moisture in Drying Rooms.

Editor Textile World Record:

Please give me some information regarding the latest and best methods of reducing moisture in drying rooms. Suncook (1022).

Moisture is removed from drying rooms by carrying the moist air out and introducing dry air in its place by means of ventilating fans of various types. Various methods of removing the moisture by condensing it in order to save the heat in the air have been tried but have proved unsuccessful.

KNITTING DEPARTMENT.

For Knitting Mill Machinery, Equipment and Supplies, see pages 236 to 253. Also Buyers' Index.

THE KNIT GOODS SITUATION.

Manufacturers and agents report a very satisfactory business during the past month on heavy weight lines. The orders that have come to hand indicate that buyers have bought very sparingly, even of the most staple lines and are now obliged to duplicate at the first sign of demand from the retailers. Jobbers advise us that during the past two weeks, a considerable amount of business has been mailed in by retailers for goods for prompt delivery, and the salesmen on the road are picking up business every day from those retailers who did not place their initial orders during the early months of the year, as in former seasons. While a large number of orders are given for fall lines, it must be said that the quantities are small and indicate that buyers for retail concerns and jobbers as well, intend to continue the hand-to-mouth policy in buying.

There has been a reduction made in the price of the 25-cent ladies' ribbed vest and pant during the past month, and some fairly good sized orders have been placed on the basis of seven pound goods at $1.90, and so long as the raw cotton conditions will permit of seven pound goods being sold at this price, we may reasonably expect that the demand for 25-cent goods will improve, as there is size and durability in a seven pound garment that will insure its sale.

Men's standard fleeces at $3.62 ½ to $3.75 have been in good demand for the past month, but we cannot find that $3.85 and $4.00 grades have been much called for. The fact of the matter is that the retailer demands a 50 cent garment and $3.75 is about the limit that jobbers will pay for merchandise to reach the retailer at this popular price.

Prices on men's 12 pound ribbed goods remain $3.50 to $3.65, and we understand that a large number of orders for ten to twenty-five case lots have come into manufacturers' hands during the past two weeks.

Not many orders on spring lines are being placed in New York of late, but the men on the road have picked up considerable business from those jobbers who do not come East, or from those who have been here but returned without placing their full complement.

No change in prices of any note has taken place since our last issue, except that manufacturers of men's low priced balbriggans

THE "CUMFY CUT" STRAIGHT RIBBED VEST.

have put in drawers made with three buttons and outside bands with the low priced lines at $1.65 to $1.70.

The various lines of ladies' straight ribbed vest that have been sold for spring, do not show so many novelties in the way of new trimmings as usual. Prices are about 5 per cent. less than last year on lines from

75c. to $1.90, with perhaps a difference of 7½ per cent. on the better lines.

Our attention was recently called to some very attractive numbers with imitation hand crocheted trimming made by the Shamokin Underwear Mills at from $1.35 to $1.50. It is understood that these have had a large sale, and that these same people have done a large business on a line of ladies' ribbed pants trimmed with torchon lace at $1.65 to $1.85. These were only on sale for a short time and it is now said that they cannot be made for the prices they were sold at.

J. H. Boyce & Son are showing a new patented straight ribbed vest, called the "Cumfy Cut," and we illustrate this garment in this issue. It is claimed that this is a great improvement on the ordinary style of straight ribbed garments; its advantage being that the straps will not slip off the shoulders, and it is said by those who have had the garment tried on that it makes a very perfect fitting vest

The Amazon Knitting Company showed a line of straight ribbed vests at 45 cents up to $1.15, and it is reported that this line has been accorded its usual volume of orders. These people have the faculty of getting up very attractive styles, and while the weight of fabric has been criticised as being too light, the line seems to be a very satisfactory one to those who use it from year to year.

The Ardsley Knitting Company of Long Island City are showing a very handsome line of straight ribbed vests with neat yokes, sewed on medallions, imitation oriental lace edges, etc., at $1.85 to $1.95. Some of the fancy figures on the yokes are in pink and blue, and they make very striking looking 25 cent numbers.

There is an increased number of lines of very light weight gauze lisles this season at $1.80 to $2.00 and those who should be in a position to know, claim that there will be a big business done on these very light weight fabrics.

In ladies' shaped goods, it is possible to buy some very sightly numbers with mercerized trimming, gusseted sleeves and fairly good cloth at $1.65 to $1.75. Lines like those made by the Lewis Jones Knitting Company, Joseph North & Son, and the Globe Knitting Mills are being offered at from $1.70 to $1.75, according to finish.

It is understood that the line made by the Roulette Company of Hagerstown, Md., is being distributed among fourteen or fifteen jobbers through the country at $1.95 regular, or with silk tape in the vest and torchon trimmed pant at $2.00.

HOSIERY.

Some hosiery manufacturers report spring sales to be equally as large as in previous seasons, but these are very much the exception, and not the rule.

Makers of full fashioned hosiery in particular are suffering from a dearth of orders, but they are displaying confidence in the belief that they will, before long, have more business than they will be able to take care of, and that buyers will be scurrying to get under cover.

It seems as though beyond a question that if retail merchants do not buy their spring goods early, there will be a big shortage felt, somewhere. Manufacturers are not going to speculate to the extent of making and piling goods on the tables, and as the jobber is not doing this either, it is evident that the retailer must make the first move, if he would have spring merchandise when he wants it. There does not seem to be a remote chance for prices to be any lower, while on the other hand, it seems like a certainty that they will be higher on some styles at least. Stock lots are being quickly cleared out of the Chemnitz market and prices advancing on duplicate orders of like qualities at the rate of 25 to 35 cents a dozen. It is not nearly as easy to find a good split foot stocking at the first limit in Chemnitz, as it was two months ago, and it would not be surprising if they were conspicuous by their total absence in the near future. German manufacturers, however, need orders and need them badly, and being fully awake to the conditions in both countries, are establishing a healthy competition with the full fashioned market on this side.

Indications at this time point to a big colored season for 1909, and it is too early

to pick out the best. Tans are finishing this season in a strong, healthy manner and in certain sections will be good all winter. This, in itself, is evidence enough that tans will be brisk for another season, at least. There has been less supply than demand for lavender this season, and this shade, together with burgundy, Russian or bottle green, purple and champagne are mentioned among the best sellers for another year, but pink and blue and other light evening shades will, of course, hold their undisputed places, as usual.

Both domestic and foreign makers are showing extensive lines of novelties in black and colored grounds, including stripes, checks, extracted and printed figures, dots, plaids, etc.

The fact that embroidered goods have lost their popularity for a time in some sections of the country may account for the attempted resurrection of fancies.

In plain lisles, the tendency is toward slightly heavier weights, and the extremely light weight numbers that have lately been so popular and so unsatisfactory as to wearing qualities have not been bought as much.

Plain colors and fancies will constitute a big part of the live sellers in men's half hose.

FANCY KNIT GOODS.

Business in sweater coats for men and women has increased steadily each season and has come to be looked on as an important addition to the knit goods trade. Novelties in coats are more pronounced than ever this season and the wide range in which these goods are made gives an opportunity to please nearly all tastes. White, grey and cardinal are the more popular colors, and white with grey trimming is considered one of the best combinations. The cutaway coat commands the leading position. It is made with three buttons and so cut and shaped over the hips as to eliminate all wrinkles. The novelty that is taking well is the regular length coat made with Dutch neck in the medium and better grades. In fact, it may be said that the lower priced goods are going slow.

Men's and boys' coats do not change in shape, but there is a tendency toward a change in color. Grey has run for some time and those who are getting anxious for a change look upon brown as the real smart color for the future. The shade of brown is between seal and Havana, and a coat of this color with grey trimming is considered quite the proper thing just now.

FULL FASHIONED KNITTING.

(Continued from September.)

Fig. 7 shows the difference between the English leg and heel with instep and toe all knitted in one piece and the present leg and heel as used for French feet. The instep and toe that were formerly made on the legger are now knitted on the French footer. The old English footer was used simply for knitting the foot bottom or sole. Of course there is a great deal of this old style work still made in England but practically all the full fashioned footers in America are French footers and 95 per cent. of the leggers have the French heel improvements also. There are a great many of the old leggers in use in Europe which accounts for the straight heel narrowings.

Now referring again to the seaming of the selvages, I will say that up to a few years ago full fashioned work was all seamed properly, as much care being exercised in connecting the selvages together as in knitting the fabric. The trouble which appears today on the French foot is not the fault of the manner in which the fabric is knitted, but is mainly due to the seaming process. On some high grade goods, the seaming is still done by hand and the selvage loops are laced together as of old and I might say here that the loops exist on all full fashioned work and only need connecting up properly, each loop being laced together with its corresponding loop on the opposite side, see Fig. 8. There is one selvage loop to every course of knitting. When a row of stitches is formed the thread forms this loop on each side of the fabric. When these loops are seamed together by hand, the seam is absolutely no thicker than the fabric at any other part of the stocking, see Fig. 9. Of course this seaming by hand is a very tedious piece of

work, but in its day it gave employment to thousands of women, who would generally do it at their homes at so much per dozen. Each individual loop was then caught up by a needle and thread and laced together, making a splendid finish to the work. Women were so expert at this work that some of them could connect up 60 to 100 pairs of

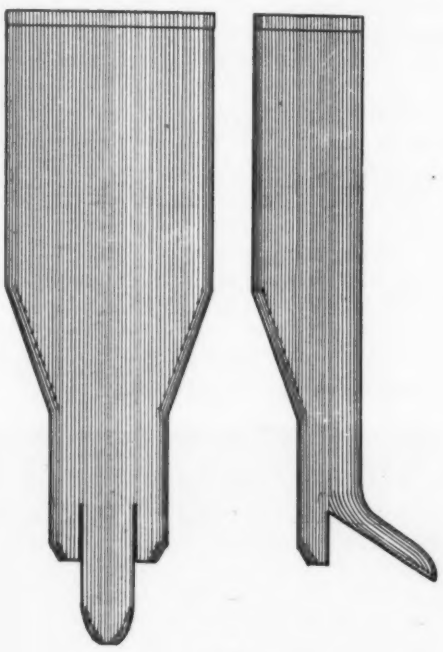


FIG. 7.

loops in a minute. The great trick seemed to be the way in which the fabric was lapped over the finger to place the corresponding loops together and to enable the needle to slip through without any delay in finding the proper thread which constituted the selvage loop. The price paid for this work averaged on shirts about 30c. per dozen and on hose about 15 to 20c. per dozen. With the advent of power seaming machinery the hand work gradually disappeared. The writer has seen scores of women who had formerly had all that they could possibly seam, waiting morning after morning for weeks for their turn to get the few remaining dozens that were being hand seamed. With the point seaming machine, the selvage threads were worked on to the points, each loop following in its order, first the one edge, then the corresponding loops on the other edge, after which, the needle, working automatically, carrying a thread would join the selvages together. This kind of a seam comes quite near being as good as a hand seam. Of course it is easy to see, on examining a greater portion of full fashioned hosiery today, that the seaming is not done by either the hand or point method. If it was, I believe the full fashioned manufacturers would have to increase faster than ever, for there is no doubt that the thick seam prevents a mul-

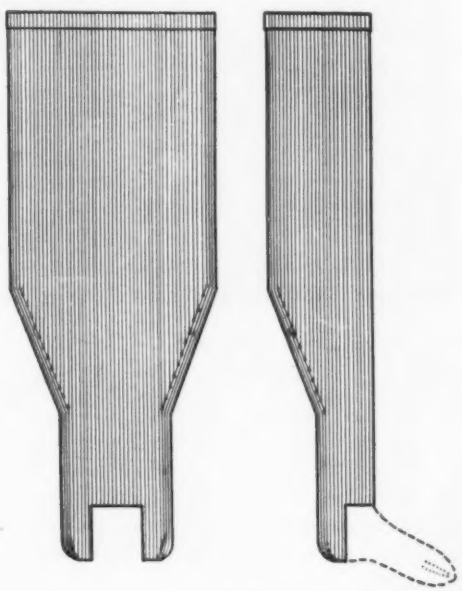


FIG. 7A.

titude of people from buying full fashioned hosiery. The reason for this drawback can be placed on the German seaming machine. This machine in the hands of a highly experienced operator will make a fairly thin seam; but being on the order of a sewing machine it can never compete with the hand work, where every stitch is properly taken and laced.

The German seamer does not seam in the selvage loops, which are always on the extreme edge of the fabric, but it is considered good work if the stitching is done in the second stitch from the selvage. The machine is not designed to catch positively any certain

loop or stitch, possessing no arrangement that can space off the proper stitches so that the needle will fall in the selvage loops. It is rightly called "an overseamer," for the work it accomplishes is the same as the overseaming of the edges of any two pieces of cloth together. The farther from the edges the needle is inserted the bigger and more bungling will be the seam. Of course the ability

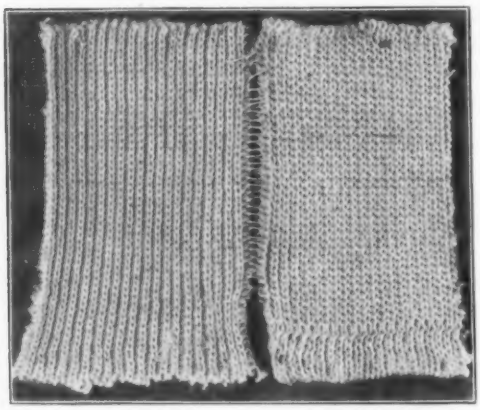


FIG. 8.

to stitch deeply into the fabric instead of taking the first thread has paved the way for careless knitting. On full fashioned work, it has always been of the greatest importance that the selvages were good, the knitter being especially careful with this part of his work, in fact so particular must he be that in case a selvage was not forming properly he must take a little hook made especially for this purpose and crochet a new selvage on the edge of fabric, thus making the loops for proper connection with the other side. With the German seamer by which it is possible to stitch up any kind of a loose selvage the care of the knitter on this particular point has relaxed and with the constant pressing by the manufacturer for greater production the selvage has been made of secondary importance. It is today sacrificed to a very great extent by the "get-there-quick" methods of both knitting and seaming. The ever increasing size of these large Cotton knitting machines and the speed at which they are driven also render the liability to make bad selvages far greater. It is plain to be seen that the operation of seaming which would formerly take in the neighborhood of 15 minutes for each stocking and which is now seamed in a few seconds on a sort of hit or miss machine cannot be conducive to the best results. The object of the seaming machine does not seem to be diverted to the point of getting a thinner seam, but towards making a flat, loose seam, which is easier to the tread. The latest improved German seamers are successful to a degree in this respect.

Admitting this unpleasant feature of the seam in the French foot, I think still that full fashioned goods possess so much merit in every other point that the seam is overlooked by people who really desire to get the highest grade of goods. Besides, by far the greater portion of full fashioned hosiery is seamed very satisfactorily and causes no complaint whatever. The numerous other advantages overbalance by far the opposing feature of the seam. The lines of all full

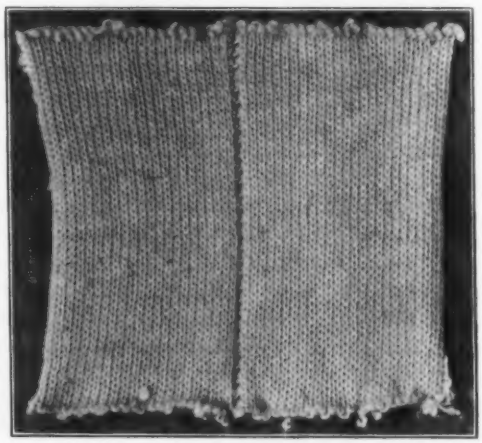


FIG. 9.

fashioned work are symmetrical and graceful because it is knitted to the shape of the human body. It retains its form until worn out, regardless of the times it goes through the laundress' hands. A great deal of hosiery resembles a bag more than anything after having been washed. Not so with full fashioned, for after repeated washings we find still the shapely instep, the firm welt and the general form still unchanged.

(To be continued.)

A PROTECTOR FOR HOSIERY BOARDS.

A holder designed to protect both the hosiery and the board during the drying process has recently been patented.

The object of the invention is to provide cushioning protector devices for the frame or drawers used for supporting hosiery boards. These forms are adapted to protect portions of the hosiery containing forms against undue wear or splintering.

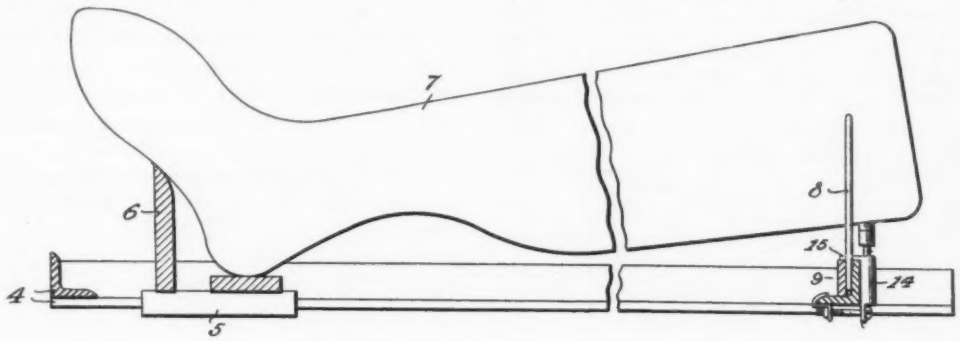


FIG 1.

Fig. 1 is a side view of a hosiery board held in position by the new device. Fig. 2 is an end view showing the wires between which the forms are inserted. Fig. 3 shows the spring controlled cushioning device.

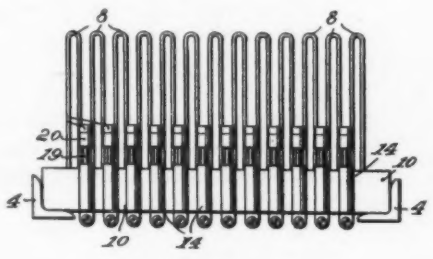


FIG. 2.

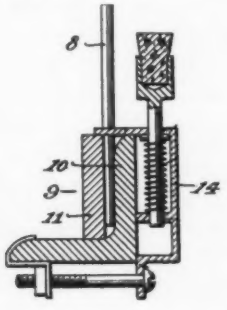


FIG. 3.

Referring to the drawings, 5 is a slide connected with the left hand portion of the board, 4, having a vertical support, 6, for engaging the foot portion of the hosiery containing form, 7.

A series of rods or hook-like wires, 8, inserted in a holder, 9, consist as shown in Fig. 3, of an angle iron, 10, upon which is located a flat transverse bar, 11, arranged to form a receptacle, 12, to support the rods or wires, 8, rigidly in vertical position at suitable distances apart, as illustrated in Fig. 2, so that the hosiery containing forms, 7, can be mounted as shown in Fig. 1.

In front of the board, 4, is shown in application thereto, the cushioning spring controlled protector, consisting of a box-shape bracket, 14, the extensions of which bear upon the holder, 9, and through which the rods or wires, 8, extend vertically. The lower portion of the bracket, 14, is offset to receive a tightening screw passing through a clamp fitting the base of the angle iron, 10, as clearly shown in Figs. 1 and 3. Spindles, 19, extend vertically through the perforations of the bracket and are provided with cups to receive cork or other yielding buffers. Around each of the spindles within the box-shape brackets are mounted coiled springs arranged so as to hold the spindles under tension in defined vertical position. As the hosiery containing forms are dropped

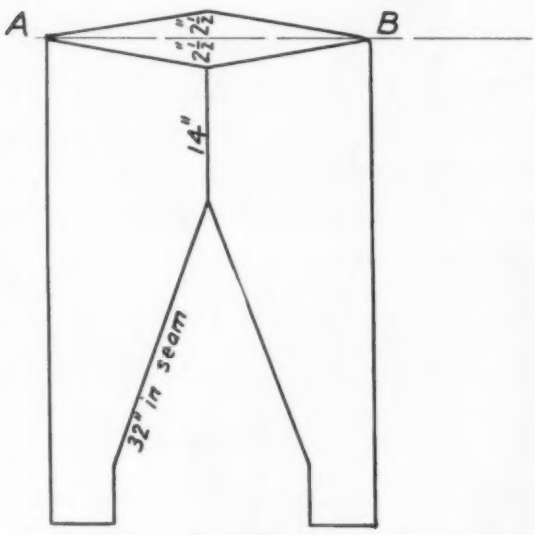
into position on the boards, the right hand extremital portion will engage the cork or other yielding buffers of the protector device, without shock or marring of the forms. It is claimed that splintering of the forms and damage to the hosiery are fully avoided by this invention.

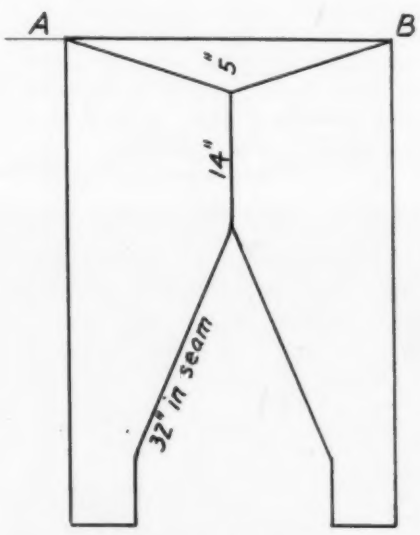
Standard Sizes for Cotton Underwear.

Editor Textile World Record:

You give in your July issue a scale of sizes for knit underwear. There are two points that are not clear to the writer. First, why is the band on men's pants to be two inches less than the size marked? For example, a size 36 band is to measure only 34 inches. Second, you will note by the enclosed sketch two pair of pants showing a difference of five inches in front and back rise. I would like to know whether the front rise should be 2 1/2 inches lower than the line, AB, and the back rise 2 1/2 inches higher than the line, AB. Or should the front rise be 5 inches lower than the line AB?

Tyler Too (1009).





The properly constructed drawer with a difference of five inches between the front and back rise, when laid down flat, will look like Fig. 1.

I find that an error has occurred in the sizes given in the July issue, although it is an exact copy of the one issued by the Wholesale Dry Goods Association. The six rows of figures, applying to the waist, hip, thigh, front rise, back rise, and inseam, should have been set up one space to the left so that the 34 waist would be under the column headed with the 34 size mark.

Certainly it is not intended that a 36 band is to measure only 34 inches.

There has been some criticism of the trunk measurement for men's union suits given in our July issue.

This scale of sizes was issued by the Wholesale Dry Goods Association, but some of the largest manufacturers of men's union suits claim that it runs too large on the smaller sizes.

We give herewith a scale of sizes with directions for measurement, as given by the Atlas Underwear Co. of Piqua, Ohio:

"Have customer remove his coat, then measure from the center of the right shoulder, down the front, through crotch, and up the back to the center of right shoulder, the starting point.

"The trunk measurement of the union suit should correspond within an inch of this measurement to insure fit. Often men of the same chest measurement vary so in trunk measurement that we advise this system in preference to taking the chest measurement. As a rule, if these directions

are followed, the chest and inseam measurements take care of themselves.

"Our scale of sizes is as follows:

Size	2	3	4	5	6	7	8
Trunk	58	60	62	66	68	70	72

"The Wholesale Dry Goods Association's scale is:

	2 or 34	3 or 36	4 or 38	5 or 40	6 or 42	7 or 44	8 or 46
Size							
Trunk	62	64	66	67	68	69	70

Fillmore.

COST ESTIMATES FOR A KNITTING MILL.

A cost estimate in a manufacturing business must be divided into several calculations. First, there are the fixed charges, based on the production per day.

Estimate 1: If the average daily production of the mill falls below the estimated quantity, the cost per dozen is increased, but if the production is above, then it is reduced.

Should the production be 200 dozen per day, the cost would not be doubled. One superintendent or manager would be required in either case. The boss knitter would answer for 100 dozen, but he would require an assistant for 200 dozen.

The same remarks apply to the forewoman, sewing machine fixer and shipper, but in the case of the engineer and watchman, one each would do in either case.

The cost for coal would be increased, as would also the oil, repairs and incidental expenses.

The rent or interest on the buildings would be more, unless the building was large enough to produce the double quantity.

The cost for insurance, interest on working capital would also be increased, but not doubled.

Estimate 2: This is based on fleece lined underwear, requiring 14 pounds of yarn to the dozen. It is an estimate on piece work prices paid to the help. As they are figured on the cost per dozen, the amount would not be affected by the daily production, but remains the same, whether for 100 or 200 dozen per day.

The figures are based on good wages for the help, such as are paid in all knitting mills in New York State.

I have taken the prices for finishing to be from 10 to 12 cents for shirts and from 18 to 25 cents for drawers, because this item varies with the finish, the more elaborate style requiring more time and higher price. The price for covering also varies. In some cases all the seams are covered and in others only those at the shoulders and arm holes of the shirts, and the gussets and up the back seam of the drawers. The price given is for partial covering.

Estimate 3 is for all materials except yarn. The cost for boxes varies because in some goods they are packed 1 dozen in a box, and in others only 1/2 dozen, making 2 boxes per dozen.

The cost for trimmings depends upon the quality and cost of material used for finishing, and therefore each separate style must be calculated differently. The cost for buttons also depends upon the quality of the button. The cost for cases depends upon how bulky the goods are. Fleece lined underwear being very bulky, the cost per dozen is greater than for light weight underwear.

To the items already given must be added the cost for yarn. To ascertain the quantity required, carefully weigh all the bobbins of yarn put on the knitting machine in knitting a roll of cloth, and to this add the weight of the waste in winding the yarn on the knitting bobbins.

After the roll of cloth has been washed and dried, have it taken to the cutting room and cut into equal quantities of shirts and drawers, including sleeves and gussets. A simple division will then give the amount of yarn required for a dozen of goods. An allowance for the waste cloth made in cutting can be made on the basis of the price that can be obtained for the clippings, or this can be omitted from the calculation and allowed to remain as an item of profit.

I have not included in the estimates the capital invested in machinery, which for 100 dozen per day would cost about $15,000.

Some manufacturers include the interest and depreciation on machinery in their fixed charges; others leave it out in their cost calculations and deduct the depreciation from the gross profits at the end of the year, leaving the item of interest on capital invested in machinery to be paid by a dividend on the capital stock from the net profits.

From the foregoing it will be seen that it is difficult to prepare an exact estimate of costs, without being in possession of all the numerous details.

Among the things to be taken into consideration are the following: Whether the power is water or steam. Whether the building is a cheap frame or a substantial brick or cement construction. Whether the machinery used is the latest or second-hand. Whether the capital stock is large enough to supply working capital as well as the amount invested in the machinery and building. Whether the help to be obtained is experienced or green hands that will have to be trained. The weight of the goods. The quality of the materials used in finishing.

Estimate 4: This is for the piece work cost per dozen on light weight underwear requiring 3 pounds of yarn to the dozen.

The cost per dozen is considerably reduced on several items as compared with estimate 2 on fleece lined underwear.

To this estimate must be added the estimates for materials, yarn and fixed charges as already given.

Knowing the special conditions and with the assistance of these estimates, a knit goods manufacturer should be able to estimate closely the cost of manufacturing fleece lined and light weight underwear.

Estimate No. 1. — Fixed Charges (based on 100 dozens per day).

	per doz.
Superintendent or manager	.05
Bookkeeper	.02
Boss knitter	.04
Forelady	.02
Sewing machine fixer	.03
Engineer and Fireman	.025
Shipper	.015
Watchman	.015
Coal	.03
Oil and repairs	.02
Needles	.04
Freight and Cartage	.01
Taxes	.005
Stationery and Stamps	.015
Building, say $10,000, 6 per cent. interest as rent	.02
Insurance	.025
Interest on working capital, say 5 per cent. on $60,000 for 6 months	.05

Estimate No. 2. — Fleeced lined underwear, taking 14 lbs. of yarn to the dozen.

Piecework cost.	per doz.
Winding yarn	.09
Knitting	.07
Drying	.03
Cutting	.05
Checking	.005
Seaming	.07
Covering	.05
Trimming (cutting out for neck in shirts and across top of drawers)	.01
Finishing, shirts	.10 - .12
Finishing, drawers	.18 - .25
Button-holing	.015
Button sewing	.015
Eyeletting and lacing	.005
Stamping	.005
Folding in and pressing	.03
Folding out and inspecting	.03
Boxing	.01
Commission for selling, 5 per cent. on selling price.	

Estimate No. 3. — Materials (except yarn).

	per doz.
Boxes to hold 1/2 doz.	.05
Trimmings	.10 - .25
Thread	.035
Eyelets and laces	.02
Buttons	.12 - .20
Cases	.04 - .06

Estimate No. 4. — Light Weight Underwear Based on goods taking 3 lbs. of yarn a doz.

Piecework cost	per doz.
Winding yarn	.035
Knitting	.03
Drying	.015
Cutting	.025
Checking	.005
Seaming	.07
Covering	.05
Trimming (cutting out for neck of shirts and across top of drawers)	.01
Finishing, shirts	.10 - .12
Finishing, drawers	.18 - .25
Button-holing	.015
Button sewing	.015
Eyeletting and lacing (drawers only)	.01
Stamping	.01
Folding in	.02
Pressing	.015
Folding out and inspecting	.025
Boxing	.005

Knitting Mills Increase Output.

The George D. Mayo Machine Co., Laconia, N. H., manufacturers of improved automatic knitting machinery, have received a large order from the Durham Hosiery Mills, Durham, N. C., and smaller orders from the Oconee Knitting Mills, Walhalla, S. C., which recently increased its capital stock from $30,000 to $50,000 for the purpose of erecting an addition and adding more machinery, the Zebulon Hosiery Mills, Zebulon, N. C., Marion Knitting Mills, Marion, N. C., Wilson & Dawson, Tarboro, N. C., and from the well known and widely advertised Holeproof Hosiery Co.

KNITTING MILL NEWS.

New Mills.

*Georgia, Brunswick. The Brunswick Knitting & Mfg. Co. reported incorporated some time ago with capital stock of $15,000 to take over the Seiglingsville (S. C.) Hosiery Mill, belonging to H. J. Moody, is ready to operate, but there are few or no local operatives to be had, therefore manufacturing has not begun. The equipment consists of 24 Boss knitters, 12 Standard F. automatics, 6 Wildman ribbers, 4 Beatty and 4 Hepworth loopers, with extractor, singer, cyclone dryer, dye vats and full equipment for finishing about 225 dozen per day of men's seamless half hosiery. The machinery is about one and a half years old and is in excellent running order. H. J. Moody is buyer. They state that additional equipment will be installed for manufacturing sweaters, underwear and infants' wear.

Illinois, Chicago. S. E. Newberger is operating a plant of 16 knitting machines and three sewing machines on all kinds of knit sweater coats for men, women and children at 259 West 12th St. S. E. Newberger is buyer and product is sold direct.

New York, Perry. Manufacturing has begun in the Launders & Watson Hosiery Mill on North Main St. Six knitting machines have been installed in the building, 30 by 40 feet, which has just been completed. It is believed that the business will develop rapidly, and additional machines be installed from time to time.

New York, Utica. The General Knit Fabric Co. has been incorporated with capital stock of $10,000. The directors for the first year are Robert W. Scott of Leeds Point, N. J.; L. N. D. Williams of Ogontz, Pa., and Joseph L. Marley of Utica.

North Carolina, Hope Mills. The Hope Mills Real Estate & Investment Co. may establish a mill to knit hosiery with equipment of 32 to 40 knitting machines. Information on machinery and supplies is requested.

*North Carolina, Marion. The Mt. Ida Hosiery Mills, reported incorporated with capital stock of $15,000 in August, will erect a building 40 by 110 ft. and will install 50 knitting machines with accompanying ribbers, loopers, dyeing and finishing machinery, also a 25 horse-power engine and a 50 horse-power boiler. R. I. Greenlee is treas., supt. and buyer.

*North Carolina, Marion. The Marion Knitting mill began construction work about September 15, and it is expected the production of goods will begin before the middle of December. As previously reported, half hose will be manufactured on 25 knitting machines. W. W. Neal has been elected pres., and S. H. Yancey, sec., treas. and buyer. The company has decided to use steam power instead of gasoline engine as stated in earlier reports. A dye house will be equipped and the product finished at the mill.

Ohio, Akron. The Kraft Knitting Co., located at 250 S. Main St., operates 9 latch needle and 9 flat knitting machines, 1 ribber and 2 sewing machines, on golf and athletic hosiery, fancy knit goods, caps, toques, shawls, fascinators sweaters and golf vests and mittens and gloves. Leo Kraft is president and treasurer of the company and Herman Kraft, superintendent. They buy worsted yarns, 2/15, and woolen yarns in 2/15, 2/20 and 2/22.

Pennsylvania, Nazareth. The Kraemer Hosiery Co .are now having installed 12 new full-fashioned knitting machines, supplied by Schubert & Salzer. In addition to the increase in their machines the company is also having erected a new addition to their present plant.

Pennsylvania, Philadelphia. M. B. Laubach, manufacturer of children's full fashioned and seamless ribbed cotton and lisle hosiery, on 280 knitters, at Indiana Ave. and A Sts., has recently increased his equipment by the installation of five new full-fashioned knitting machines of the Schubert & Salzer make, for knitting ladies' hose. He sells direct.

*Pennsylvania, Philadelphia. The Beattie Hosiery Co., reported by us as contemplating the removal of their plant from 2420 Waterloo St. to larger quarters in which they could enlarge their operations, are now located at 4328 Trenton Ave., Frankford. They are manufacturers of Women's seamless cotton hosiery and cut feet, on 22 latch needle knitters, and sell the production direct.

Pennsylvania, Philadelphia. The Amherst Knitting Co., who operated 91 knitters on women's and children's seamless hosiery in the building formerly used as a dye house by the Oldham Mills at Allegheny Ave. and Boudinot St., have removed the plant to Baltimore, Md., the home of the officers controlling the mill. The officers of the company are John S. Tapscott, pres., and Frank R. P. Brooke, 15 West German St., Baltimore, treas.

*Pennsylvania, Philadelphia. Harry Munz, reported by us some time ago as having started a small plant for the manufacture of hosiery in the rear of his home at 2048 E. William St., has removed the plant to 2429 Waterloo St., where it is now operated under the name of the Surpass Hosiery Mills. He has 10 National knitters now in operation and has ordered 10 Jenckes machines, which he expects to have set up within a short time. He will manufacture ladies' high grade seamless hosiery making a specialty of fine gauze goods of mercerized yarn using 216 needles and

2/65 mercerized and 1/80 and 2/80 cotton yarns. The production is sold direct.

Pennsylvania, Reading. The Invincible Hosiery Mills, a new hosiery knitting company, has been formed by John Goelz and Charles Hunzberger. The capital stock is given as $10,000. They will make 220-needle half hose in a plant which will be located at 235-241 Cedar St. Operations will begin shortly.

*Vermont, Bennington. The new knitting mill, previously reported as being started by E. A. & E. H. Smith, will be known as the Smith Hosiery Mill. Knitting machinery is now being installed in the building formerly used by the Imperial Laundry, on East Main St. Early reports stating that a yarn manufacturing department would be included are incorrect, as half hose only will be manufactured at first, all knitting yarns being bought. Earl A. Smith who is at the head of this project was formerly employed by Charles Cooper.

*Virginia, Portsmouth. Contract has been awarded by Joseph A. Parker for the erection of his large new mill, details of which were given in August. Edward Overman of Portsmouth has received the contract.

Enlargements and Improvements.

Connecticut, Plainville. One new 420-spindle, Davis & Furber mule, has been installed in the local plant of the Bristol Mfg. Co. The Bristol plant and the mill at this place have been shut down for two weeks for the annual vacation for operatives. Manufacturing was resumed at both mills on Tuesday, Sept. 8. Reports to the effect that a large quantity of new machinery is being added, the mills being shut down for a number of weeks for the purpose, are incorrect.

*Connecticut, Windsor Locks. The Medlicott Company is planning another addition to its factory. An extension 50 by 50 feet will be made to the building at the north end by running it out that distance toward the river. The addition will be two stories high, and will be constructed of brick with a concrete foundation. The contract has been awarded to Watson, Tryon & Son, of Hartford. The new boiler house on which construction work started in August is about completed.

*Georgia, Augusta. The new hosiery knitting company reported started by J. Inman Davis and J. J. Tyler of Hephzibah, refers to an enlargement of J. J. Tyler's hosiery mill started several months ago for the manufacture of ladies' cotton seamless hosiery. The present equipment is 12 knitting machines. Additional machinery will be installed bringing the equipment up to 20 knitting machines and 3 ribbers and the company will be incorporated and a finishing plant equipped.

*Georgia, Dalton. For the present the Eagle Hosiery Mills, combining the Dalton Knitting Mills and the Eagle Hosiery Mills, will not increase their equipment. Both plants will be in the same building and will be run as one plant. 176 needle hose in black and gray mixed goods will be manufactured. J. T. Black is pres., T. R. Jones is treas. and F. C. Bivings is buyer and gen. mgr. The combined equipment is 100 machines. The plant is operated by steam power and dyes and finishes its product.

*Indiana, Fort Wayne. The Fort Wayne Knitting Mills are having installed in their mills nine new Schubert & Salzer full-fashioned machines, which have recently been received by them and are now being set up.

*Massachusetts, Ipswich. In addition to the improvements now being made to the Ipswich Mills, the company expects shortly to begin the extension of the dye house.

New Jersey, Dover. Paul Guenther, manufacturer of men's and women's fine full-fashioned silk hosiery, has received 10 fine gauge full-fashioned machines of the Richter make through their agent, Hugo Huettig, 581 Bourse Bldg., Philadelphia. The machines were delivered during the months of July and August and are now partly put up and partly in course of erection.

*New York, Oswego. The Ontario Knitting Co., whose plant as previously reported has been condemned for barge canal purposes, will erect a new building on East First St., 100 ft. wide and 5 stories high. Electricity will be used for motive power. Property owners adjoining the site object to the mill, claiming that their property will be injured. It is understood that the officials of the company are willing to buy the property of dissatisfied property owners.

North Carolina, Newton. Several additional knitting machines have been installed and other improvements made, including the enlargement of the warehouse and a new office room, by the Newton Hosiery Mills. Men's, ladies' and children's hosiery is the product on equipment consisting of 300 knitting machines and 12 sewing machines. D. J. Carpenter is the proprietor.

Ohio, Piqua. Additional machinery has been installed in the plant of the Superior Underwear Co. The full equipment is being run night and day, the company's fall production having been sold up to October 15. Men's union suits are manufactured exclusively. J. P. Spiker is pres. and buyer.

*Pennsylvania, Birdsboro. An addition will be built to the plant occupied by W. B. Beyer & Sons, manufacturers of men's and women's seamless cotton hosiery on 70 knitters, by L. H. Focht, owner of the building. The business has grown to such a degree that the present plant is too small to take care of the orders received. It was reported last week that steps would be taken to increase the production of this company.

Pennsylvania, Philadelphia. Louis Engle & Bro., manufacturers of fancy knit goods, sweaters, golf vests, mittens and gloves, on 2 flat knitters and 25 sewing machines at 919 Commerce St., report that they have changed the name of their plant to the Lebro Knitting Mills and have also put in 10 new flat knitters, 2 new sleevers, 2 body frames and a new 16-spindle winder. They have still on order 4 body frames which they expect to have set up and in operation within a few days. Business with them is very good. They sell direct and through Ed. Levy, Flat Iron Bldg., New York. They are now using 2/22 wool and 2/20, 4/20 and 4/15 worsted yarns.

Mills Starting Up.

*Michigan, Detroit. The plant of the Detroit-Alaska Knitting Mills, previously reported to have shut down indefinitely, resumed manufacturing Tuesday, Sept. 8. During the curtailment a number of repairs to the plant were completed.

New York, Nichols. The Nichols Knitting Mills have resumed manufacturing after a short shut down.

New York, Oswego. The knit underwear plant of Frederick Conde is again in operation after a shut down of one month. Numerous repairs were completed.

New York, Waterford. The Ford Mfg. Co. of this place has resumed manufacturing following the annual vacation of two weeks.

North Carolina, Randleman. After a shut down lasting two weeks, the Randleman Hosiery Mills have resumed manufacturing. Children's and infants' cotton hosiery is manufactured on 500 latch needle knitting machines. They buy 8s to 40s mule spun yarns.

Pennsylvania, Philadelphia. The Thomas D. Weston Company, 3731 to 35 Filbert St., recently reported by us as about to start up again after a shut down of several months, has been reorganized. Mr. Thomas D. Weston, sec., treas. and mgr. has purchased the interests of William M. Field and William L. Waring, its pres. and vice pres. Mr. Weston is now the pres., treas. and mgr. of the company and has identified with him in the business other parties in this city who have been long and well known in the manufacture of gloves in this country. The plant, in the future, will be run on plain and fancy gloves, wool and worsted, for women and children, operating 9 rotary frames, 3 loopers and 8 sewing machines and employing 70 hands. The production will be sold direct.

Facts and Gossip.

Connecticut, Bristol. N. L. Birge Sons Co. are running their factory overtime. They have kept up full production throughout the business depression. Men's flat cotton underwear is manufactured on 7 sets, 2,016 cotton spindles, 33 spring needle knitting machines and 32 sewing machines.

*Georgia, Brunswick. The Brunswick Business Men's Club makes an offer to knitting mills as follows: To companies operating mills employing from five to ten hands, the club will give free rent or space in a brick building with plenty of light and with a separate department for each plant. The building is in the centre of the business part of the city and but a block from the water front. Rent will be furnished free for three years, free taxes for three years, and in addition free electric power, water, light and heat. They have accommodations for twenty to thirty small plants on this basis. It is stated the loaction assures low freight rates, as a number of factories in this section ship in combination, getting the benefit of the bulk rate.

Georgia, Columbus. Some of the local knitting mills are running overtime to keep pace with the increasing orders. Overtime work will not be suspended during the month of September.

*Illinois, Rockford. Nothing authentic can be stated regarding the proposed new knitting plant, or new knitting machine which it was reported would be operated. It is probable that a new knitting machine has been invented and will be operated at this place, but the conditions are such that the parties interested will not make anything public.

Massachusetts, Great Barrington. The Reliable Knitting Co. is having a greater demand for its product than it can meet and there is plenty of work ahead to keep all the machinery in full operation for some months. The opinion is expressed by men interested in the company that although probably no attempt will be made to increase the capacity of the plant until the need of it has been demonstrated by continued experience of the kind that it is now having, yet the mill must increase the capacity within a year or two.

Massachusetts, Methuen. The knitting mills appear to be doing an excellent business and some departments are running evenings in order to keep up with the demand for goods.

Massachusetts, Needham Heights. Beginning this week, the knitting mills of the William Carter Company return to the full scehdule of working hours. Underwear, fancy knit goods, mittens and gloves are manufactured on 220 knitting machines, the product being sold direct.

New Jersey, Bayonne. Alexander Schief, said to be a hosiery manufacturer of Chemnitz, Germany, is reported to be considering the advisability of locating a hosiery factory at this place.

*New Jersey, Salem. It is stated the liabilities of the Salem Knitting Mills are $100,000, and assets, $25,000. This company was declared bankrupt in August, D. Harris Smith, a local attorney, being appointed receiver.

New York, Cohoes. Every department of the Rob Roy Hosiery Co. has been started on full time. This is the first time the full production schedule has been in force for months.

*New York, Mohawk. The plant of the Mohawk Valley Knitting Mills was sold by the Receiver at auction, the property being purchased by Harry M. Golden, cashier of the Mohawk Valley Bank, a large creditor, for $25,000, which was the only bid made. It is expected that arrangements will soon be completed to resume manufacturing in the plant. Various reports have been given out regarding the use to which this property will be put, but we are advised that nothing has been decided upon by the parties interested. It is probable that manufacturing will be resumed before spring.

*New York, Troy. It is reported that the Wright's Health Underwear Co. has bought the Wayside Knitting Co.'s mill. The Wayside Knitting Co. was declared bankrupt early in the summer and the property was leased to the Wright Co. Later, arrangements were made to offer the property for sale at public auction.

New Machinery and Processes.

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to textile manufacturers. It is not a list of patents, but of improvements coming on the market. The idea being to present to our readers a systematic monthly record of new machinery etc., of interest to textile mill men.
We invite machine builders and others to send us such information for this department.

Automatic Singeing Machine. The Automatic Machine Works, 315 Elm St., Reading, Pa., are bringing out a new singeing machine, equipped with a patent positive stripping device which is claimed to save gas, hosiery and labor. It is built in two sizes with single and double feed.

Cold Hosiery Press. The Automatic Machine Works, G. W. Stephenson, proprietor, 315 Elm St., Reading, Pa., are putting on the market a cold hosiery press which is claimed to be extremely simple in operation, free from complicated parts, requiring little power, and giving first-class finish. It is built in two sizes. It will be described at greater length in subsequent issue.

Fan Motor. The B. F. Sturtevant Co., Hyde Park, Mass., has recently brought out a new line of fan motors, description of which appears in this issue.

Underwear Pressing Machine. The United States Hoffman Co., Syracuse, N. Y., are placing on the market a machine for pressing underwear, which is described and illustrated in this issue.

Press Boards. The Merwin Paper Company, Hartford, Conn., are now introducing to the trade a new press board, made on the English formula, which is very light in weight, and of extremely high finish. It is claimed to withstand a greater degree of heating without injury to the fiber or finish.

Wool Oiler. Franz Hast, Eitra, Germany. A method of oiling wool at the card the oil storage tank being placed above the self feed. The flow of oil is automatically started and stopped with the starting and stopping of the feed.

Reclaiming Oil. Emanuel Rusch, Vienna, Austria. A machine, called a turbine separator, which extracts the oil from yarn or cloth that has become saturated either by being used for wiping machinery or by other means.

Automatic Loom. Tannwalder Baumwollspinnfabrik, Vienna, Austria. An automatic device for changing the shuttle while the loom is in operation.

Hygrometer. Emanuel Rusch, Vienna, Austria. An improved hair hygrometer in which the shaft is dispensed with, thus avoiding difficulties that have been connected with the use of this class of hygrometer.

Plush Loom. Heinrich Schoenbrenner, Dueren, Germany. An automatic let-off for the warp of a plush loom by which the length is regulated for the pile required.

Spooler. Gladbacher Textilmaschinenfabrik, Gladbach, Germany. An improved brake for yarn spoolers, designed to stop the machine more quickly than is now possible.

Mercerizing Machine. C. G. Haubold, Jr., Chemnitz, Germany. An improved machine for mercerizing skein yarn. The improvements consist in the method of obtaining the tension on the yarn.

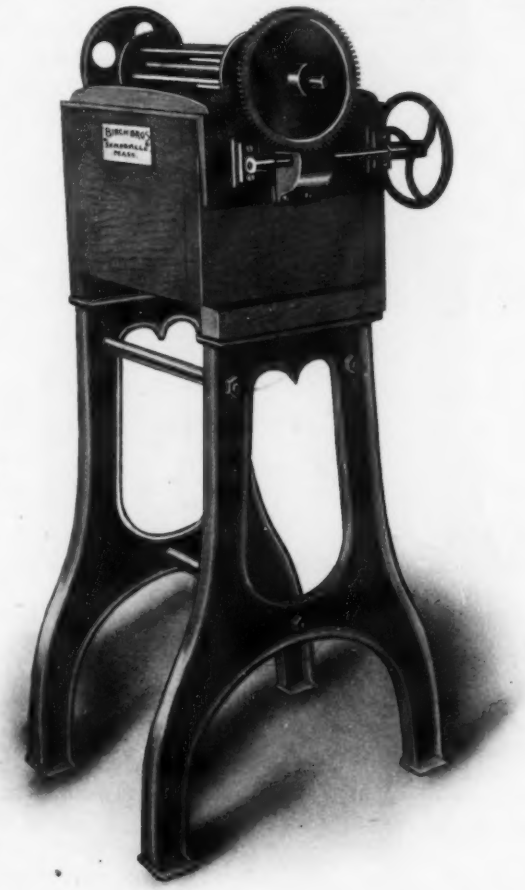
Silk Luster. Joseph Eck & Son, Duesseldorf, Germany. An improved method of imparting a silk-like luster to fabrics; the process being adapted to the production of stripes, checks and other fancy effects.

Ring Frame for Woolen Yarn. Oscar Schimmel & Co., Chemnitz, Germany. A ring frame for woolen yarn built so that the press rolls can be raised when necessary in piecing up ends.

Dyeing Machine. J. G. Linder, Crimmitschau, Germany. A rotary dyeing machine. The liquor enters through a hollow shaft, the cylinder being divided by partitions.

A LABORATORY DYEING MACHINE.

The illustrations show a new machine which has rececntly been invented and perfected by Albert Birch, proprietor and manager of Birch Bros., Somerville Machine Works, Somerville, Mass., for dyeing samples in the laboratory.



LABORATORY DYEING MACHINE WITH WOOD TANK.

There are two styles, one fitted with a wood tank, the other with iron tank.

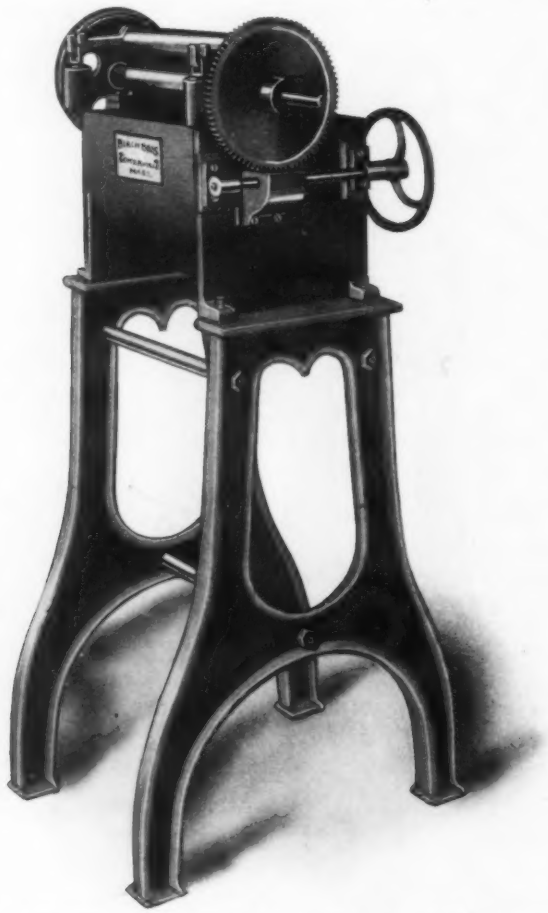
The cuts show the operation of the machine very clearly. The wood tank machine is the one recommended for general work, and may be considered the standard machine. The tank holds about 2 1/2 gallons. It is detachable, and can be taken out, and the rolls taken off to permit thorough and convenient washing. The rolls are operated by a little electric motor, which can be attached to any electric light socket, and the speed is so timed that the dyeing conditions in this machine are what they would be on a full sized machine in mill use, or in an ordinary dye kettle. It may be used for open width or string work, on cloth, yarn or slubbing.

The iron tank machine is similar to the wood tank machine in construction, and is especially adapted for direct and sulphur colors.

A number of these laboratory machines have been installed with leading concerns and found to be very useful.

HERMALLIN.

A material which should prove of unusual value to the textile manufacturer is the new sizing compound, "Hermallin," made by the Vera Chemical Co., Stoneham, Mass. The manufacturers state that one of the important advantages of this preparation is the elastic quality which it imparts to the yarns. It may be used with potato or other starches for sizing woolen, cotton and silk. Among the other advantages claimed are: A far greater affinity is obtained than by the use of the ordinary preparations. "Hermallin" is absolutely neutral and does not affect the fabric in any way. When this substance is added to the size, the preparation penetrates the yarn or thread thoroughly and in the subsequent washing it dissolves immediately. The natural elasticity of the thread is not affected and so-called sizing spots are prevented. All kinds of yarn are uniformly penetrated, the compound giving good results on cheviot or single worsted yarn. The penetrating quality of "Hermallin" and the ease with which it is removed from the fiber make "Hermallin" an ideal size retainer. The manner of application is simple and variations in quantity and methods make it applicable to a wide range of work.

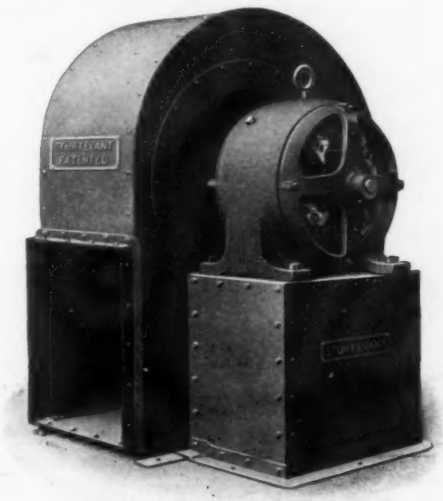


THE LABORATORY DYEING MACHINE FITTED WITH IRON TANK. (PAGE 835.)

A NEW FAN MOTOR.

The changes in conditions under which fans are used made it imperative that the machine for driving a fan should be suitable to the fan, and also in keeping with the apparatus found in up-to-date power plants and manufactories.

In order that the electric motors used for driving Sturtevant fans might be the best obtainable, an entirely new line, designated as "Type H Motors," has been designed. While these motors are applicable to the regular work of driving machine tools, etc., they are primarily fan motors, and their characteristics have been considered mainly as regards the driving of fans.



NEW STURTEVANT MOTOR APPLIED TO FAN.

The Sturtevant Type H Motor is not only as efficient as any motor built of the same size and speed, but has capacity for great overload. The motors will carry a 50 per cent. overload one hour without destructive sparking or heating, and will carry 100 per cent. overload for five minutes. These characteristics show their great adaptability to driving fans, for electric ventilating fans may be accidentally overloaded, thus placing upon a motor a load far in excess of what the design called for. Still further, ventilating fans often receive little attention, and it is not uncommon to find them so installed that the starting rheostat is at a considerable distance and not in sight of the fan. Thus, the operator may not know the conditions of the fan, conditions which might be detrimental to the motor. Special pains have been taken to keep the heat rise low, and tests made in clean, dry places have shown that the heat rise for open and semi-enclosed motors is less than 104° F. at normal speed and output.

These motors are made in a complete line from 1 to 100 h. p. in order that they may meet the requirements of all installations. They are designed primarily for driving the fans direct-connected, but are equipped with slide rails in case the motor is to be belted to the exhauster.

The magnet frame is cast-iron, suitably machined for the pole pieces and end covers or bearing brackets. As shown in the illustrations, the bearing bracket is bolted to the frame by four bolts, spaced equally so that the motor may be bolted to the floor, wall, or ceiling by simply shifting the position of the bearing brackets, no additional machine work being necessary.

The pole pieces are built up of soft steel punchings, and located off center so that the bearing brackets on the two ends may be

exact duplicates. The punchings are of such shape that they distribute the magnetic flux to produce sparkless commutation under wide variations of load. Cast-iron horns eliminate disagreeable humming while retaining all the advantages of laminated construction. The commutator and armature is a self-contained unit, for the sleeve of the armature has a hub for the reception of the commutator shell. The armature which is built up of annealed steel punchings thoroughly insulated is provided with openings for the free circulation of air, resulting in abundant ventilation. The commutator, which is made with great care from bars of hard drawn copper and carefully selected mica, is insulated between the clamping rings and the segments, and the whole commutator is assembled while hot under great pressure which holds each bar firmly in place and reduces the liability of its working loose.

The brush holders are provided with braided copper cable shunts which relieves the brush holder body and spring from carrying current. The brush holders are supported by a ring which is clamped in position by the front bearing bracket. Although the brush rigging may be shifted easily, there is no danger of the brushes being thrown out of line or tilted, which is the case when the brush rigging is clamped by set screws.

In 1906 the rate of importation of woolen goods into Canada was equal to $2.68 per capita of the population, allowing it to be 6,500,000, as compared with 26 cents per capita of the 90,000,000 in the United States.

In 1900 there were in Canada 157 woolen mills and six mills making woolen yarn, all employing a capital of $10,000,000. In 1905 the census showed only 103 woolen mills and three making yarn with a capital of less than $7,000,000. There was a decrease of 2/196 workers in the woolen mills in five years, but the imports of woolen manufactures increased from $9,973,307 in 1900 to $21,213,234 in the fiscal year of 1908. This was the effect of the reduction of one-third of the regular tariff rates on the imports of woolen goods from Great Britain.

A NEW MATERIAL FOR SIZING AND FINISHING.

A new material for sizing and finishing all kinds of cloth and yarns is being introduced in this country under the name of Guminat by The New Brunswick Chemical Co., New Brunswick, N. J. Like other successful materials used in the manufacture and finishing of textile fabrics, it is a German product and with German manufacturers is recognized as possessing superior qualities for giving fullness, body and weight to the goods.

Guminat is totally concentrated, with a specific gravity of 50° Baume. It is prepared for use by simply pouring a sufficient quantity of warm water over it and then thinning down to the required strength—about 2° Baume—for the goods to be treated. No boiling is necessary. Light goods are treated with a strong solution and heavy goods with a comparatively weak solution. It is commonly used without further addition, but other substances may be used with it as particular cases may require. It is recommended by the manufacturers to improve the finish of all kinds of cloth, cotton, woolen, worsted, linen and silk.

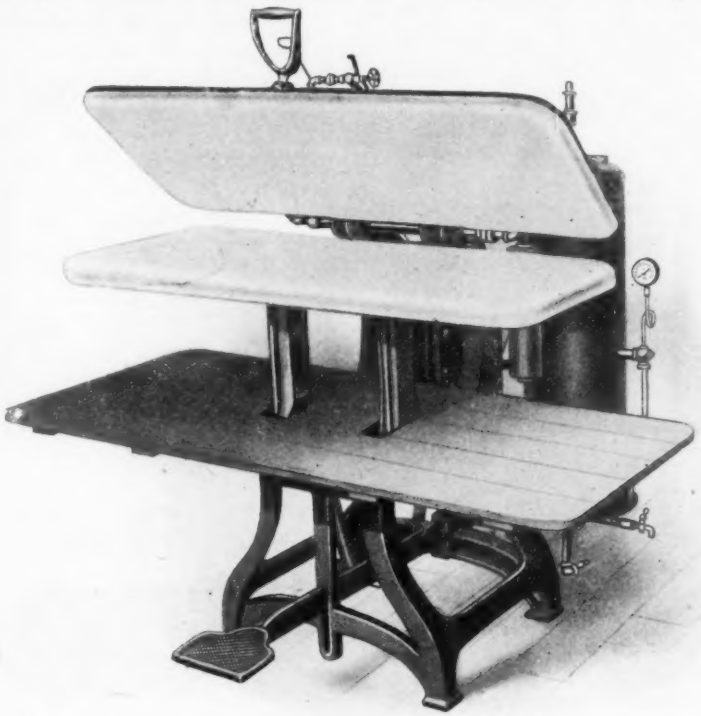
As a size for yarns, Guminat is mixed in the proportion of 10 lbs. to 100 lbs. of potato starch and gives a sized yarn of good strength and elasticity. In some cases filling yarns have been treated with Guminat after dyeing. The material is guaranteed harmless to fiber and color. Even when applied cold, it immediately enters the fiber and instead of coating the yarn closely unites with it and does not chafe off in weaving or dust off in the napping process. The manufacturers claim that while fabrics and yarns are given a full, heavy appearance with good luster, the feel is not injured and the colors are improved.

The material does not undergo any change when goods are kept in storage and it is guaranteed that the fabrics will keep their natural wool character without hardening or changing in any way. The quality of not drawing moisture or growing mouldy is of especial value.

Further particulars of this material may be had by applying to The New Brunswick Chemical Company, who are the American agents.

THE HOFFMAN UNDERWEAR PRESSING MACHINE.

The illustration shows a new machine which is being put on the market by the United States Hoffman Co., Syracuse, N. Y.



A NEW UNDERWEAR PRESSING MACHINE.

Several months ago, certain underwear manufacturers discovered that the Hoffman principle of pressing could be applied to underwear, with excellent results, and so the Hoffman underwear machine was developed, and we are informed that every manufacturer in the town where the principle was first tried, has purchased one of the machines, and there are a number of others in use.

The machine is a combination of steam, heat and pressure; the steam is superheated to a high degree of temperature before being injected into the garment which has been placed on the buck. The head is first brought to bear on the goods, and at the same time, the necessary amount of steam is released and forces its way through the garment, pressing at the same time. The combination of steam and pressure gives the goods a soft and lofty feeling, bringing out the fleeciness of the fiber and giving it the raised and natural appearance that is extremely desirable. The garment comes from the machine practically ready to be folded and ready to be put in the box, as there is no opportunity whatever for broken buttons.

Manufacturers who have used it on the high class goods recommend it as being quicker than the iron and producing a superior finish. The machine requires only gas connections to operate, and can be fitted up either for manufactured gas, natural gas, gasoline or air pressure gas.

There are demonstrating rooms at 37 West 42d St., New York City, where the machine may be seen in operation as well as at the factory in Syracuse.

THE BRISTOL AUTOMATIC COUNTER APPLIED TO LOOMS.

The illustration shows a recent application of the Bristol Counter, to a Crompton-Knowles towel loom, arranged to count the numbers of towels woven. It shows at a glance, and without possibility of error, the production of the loom.

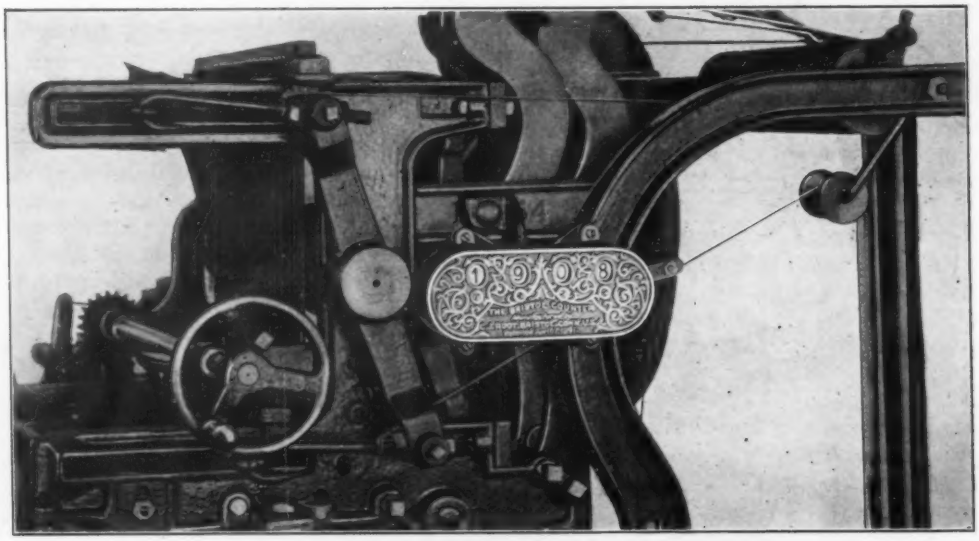


FIG. 1.

The counter can also be arranged, and is being used to count the number of yards woven, or the number of picks woven. It affords a basis for paying operatives equitable to both employer and employe and prevents argument and dispute.

FIG. 3.

It can be arranged so as to reset from the outside, or so as to prevent entirely any tampering from the outside, depending on the purpose for which the count is desired.

The counter may be actuated either by lever or rotating shaft. Fig. 1 shows a lever attachment, Fig. 2 shows counter for shaft attachment, Fig. 3 shows the counter adapted for lever attachment.

This system of indicating production of machines either by yard, pick, or other unit automatically, has attracted the attention of a number of progressive textile manufacturers who are constantly finding new uses and applications for the Bristol Counter. It is

FIG. 2.

manufactured by the C. J. Root Co., Bristol, Conn.

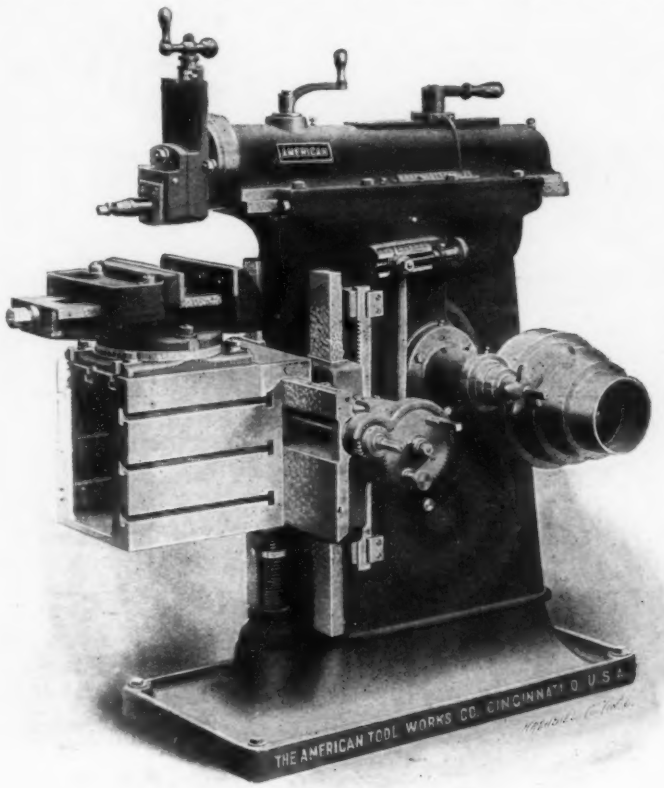
Under normal conditions the wool fiber will contain from 14 to 18 per cent. of absorbed moisture.

The imports of silk into India during the fiscal year ending March 31, 1907, amounted to 1,420,467 pounds, valued at $1,893,330, a decrease of 225,233 pounds from the imports of 1906, owing to the deficiency in the crop of 1905.

AMERICAN 15-INCH SINGLE-GEARED CRANK-SHAPER.

A useful machine for the repair department is shown in the accompanying illustration. It is a 15-inch single geared crank shaper just brought out by the American Tool Works Co. of Cincinnati, Ohio. The

The ram, in many respects the most vital part of the machine, is very heavy and rigid throughout the entire length of the stroke. Like the column it is braced internal and has long wide bearings on the column with continuous taper gib having end screw adjustment for taking up the wear. The stroke is positive and has four rates of speed, ranging



A NEW "AMERICAN" CRANK-SHAPER.

length of stroke is 15 1/4 inches; down feed to head is 6 inches; vertical travel of table, 14 inches; and horizontal travel of table, 18 inches. In capacity and arrangement it is suitable for a large variety of work at high speeds, as proved by tests on cast iron and steel recently conducted. Easy access is provided to all working parts through a large door on the rear side and all running bearings are bushed to permit relining in case of wear incident to the performance of the severe requirements of this class of work.

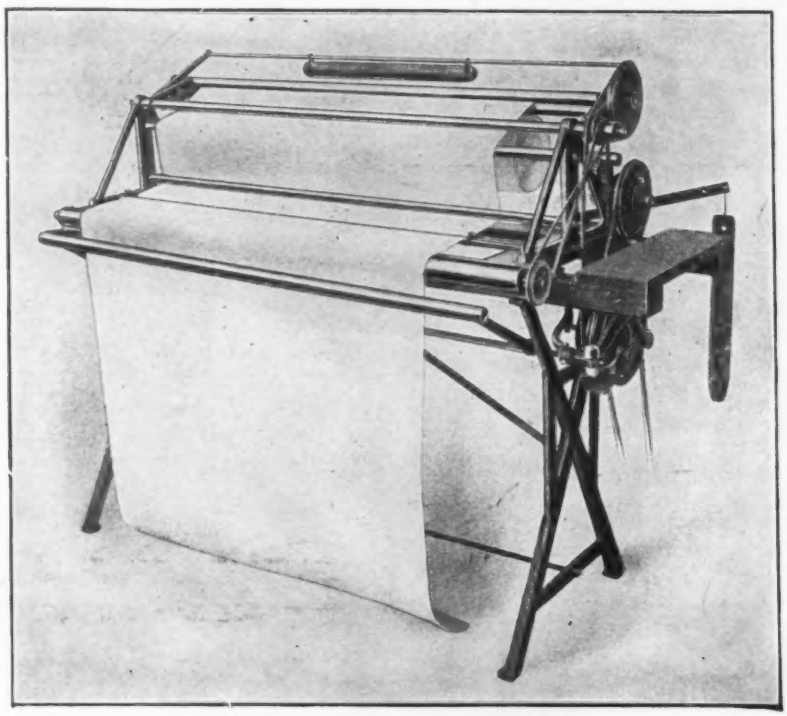
from 20 to 65 strokes per minute. The rocker arm is extra heavy and braced to give the ram a uniform rate of speed its entire stroke. The gearing ratio and wide belts are calculated to furnish sufficient power for work adapted to this type of machine.

The head may be operated at any angle within an arc of 100°. As will be noted from the particulars given above, the down feed of the head is of unusual length and the feed screw has an adjustable collar reading to .001 of an inch. As shown in the illustration

the table is of box form with three T-slots on both top and sides. It is thoroughly braced internally, insuring accuracy and rigidity.

The cross feed is of special design. It is variable and automatic with a range of .008 inch to .200 inch instantly obtainable when the machine is running. No adjustment of feeding mechanism is necessary when changing the position of the rail, thus removing a common fault. The feed is thrown in or out, also reversed, through the knob on the large feed gear.

Some of the special features embodied in this machine are the arrangement for changing the length of stroke at will without stopping the machine. The device for positioning the stroke is located on the ram near the head and may be operated while the machine is running. The down slide of the head is fitted with continuous taper gib. A patented automatic stop releases the feed, preventing breakage to parts when the tool is fed into the cut or should the apron be accidentally fed to its limit in either direction on the rail. The gears are of steel cut from the solid, and pinions in the driving frame are cut from bar steel. The regular equipment of this machine includes vise, countershaft, all necessary wrenches, and automatic safety stop. At extra cost the machine can be equipped with automatic stop dog for cross rail whereby the feed may be stopped at any point, circular attachment, mold makers' vise, tilting table, 4-speed gear box and electric motor drive.



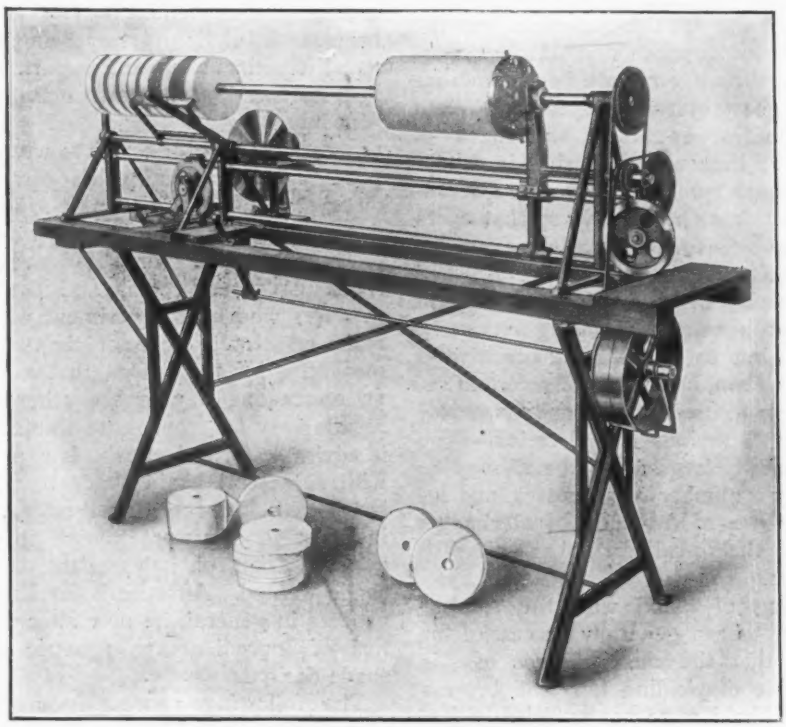
THE ADAMS CLOTH WINDING MACHINE.

CUTTING AND WINDING MACHINES.

The illustrations show two machines recently put on the market by A. L. Adams, 151 Middle St., Bridgeport, Conn., for cutting wide fabrics into narrow strips. First the cloth is wound on a paper tube into a roll 40 inches long on the winding machine, then transferred to the cutter which will cut small rolls 1/2 inch, 1 inch, 2 inches, or any

width desired from the end of the roll of cloth. The two machines are used together. They handle goods 40 inches in width, and are suitable for either straight or bias cutting. The floor space occupied by the cutting machine is 6 ft., 2 in. by 2 ft.; winding machine, 4 ft., 10 in. by 2 ft. Each machine requires 1/2 h. p. The manufacturer states that the capacity of these machines is 100,000 yards of narrow stripping per day.

The machine is fully covered and protected by patents in the United States, Canada and foreign countries.



THE ADAMS CLOTH CUTTING MACHINE.

Harold H. Hart, superintendent and designer of the Cocheco Woolen Mills, East Rochester, N. H., has resigned to accept a similar position with the Racine Woolen Mills, Racine, Wis.

Robert A. Cadwell of Pittsfield, Mass., has taken the position as superintendent of Frank F. Pels & Company, New Durham, N. J. He was formerly employed at the Peck Mfg. Company, Pittsfield.

Geo. D. Wooley, overseer of weaving at the Butler Mill, New Pedford, Mass., has taken charge of slashing and drawing in addition to the weaving department.

Wm. Blade, formerly superintendent of the branch mill of the Lorraine Mfg. Company, Pawtucket, R. I., but now holding a position in the main mill as superintendent, was run over and seriously injured by an automobile in Pawtucket recently. He was taken to the hospital suffering from concussion of the brain and is in a critical condition.

A. W. Lockwood, who recently severed his connection with the National & Providence Mill, Providence, R. I., to accept a position as superintendent for the Jamestown Worsted Mills, has resigned his position and returned to his home in Olneyville, R. I.

Peter Flynn, superintendent of the Leader Weaving Company, Central Falls, R. I., has resigned and accepted a similar position with a large silk mill which will be known as the Ninigret Mills Company.

Frank Tubbs, superintendent of the knitting department of the Johnstown Knitting Mills, Johnstown, N. Y., has resigned to accept a similar position with the Superior Knitting Company, Piqua, Ohio.

Dyeing, Bleaching, Printing, Etc.

DYEING KHAKI CLOTH.

BY DR. LOUIS J. MATOS.

Ever since the Spanish-American war the cotton and woolen cloth manufacturers, together with their dyers, have been much interested in the problems of dyeing the cloth generally known as khaki, the shade of which at one time was somewhat in doubt. Even the samples obtained from the government did not "match up" well, so that dyers were at a loss as to just what the exact requirements should have been.

To dye a clay or mud color upon cotton cloth is not a matter requiring any very great skill, but to have the shade always even and uniform, and to possess certain requirements as to its durability and "fastness" is a matter of serious consideration. The shade technically known as "khaki" may be produced by a number of processes, and involving the use of dyestuffs of all known classes from the so-called sulphur colors to mineral dyes.

The dyeing of khaki with the sulphur colors has not been generally successful for the reason that the class of dyes of this group capable of yielding tans and browns suitable for khaki were not sufficiently fast to light and the ordinary wear and tear incident to the usage of military service; and further, there was always present a danger due to the existence of a small quantity of free sulphur liberated during the dyeing process, the action of which was detrimental to the life of the cloth, as was evidenced by the lack of durability of such sulphur dyed cloth as found its way to the outer world through the sportsmen's supply depots. So that we may be safe in ignoring the sulphur dyes as a means of dyeing the service cloth.

The natural dyestuffs have played a minor part in the dyeing of this kind of cloth, although many dyers believed that fustic and similar woods, when properly treated with mineral salts in suitable combinations as to shade required, would answer every purpose, but their lack of fastness to weather and washing prevented their extended use.

Shades properly produced upon cotton by means of the metallic oxides have always been regarded by dyers as being fast to the usual treatment accorded garment cloths, and further, that they are not likely to inflict injury to the fabric during the dyeing process. In view of this, it is natural to suppose that the attention of dyers was early directed to the use of metallic salts, when the demand was apparent for khaki dyed goods.

The formulae given below are for khaki shades dyed upon cotton, and it is suggested to dyers who may experiment with them to make absolutely sure of the weights and measures, for the reason that a fraction of an ounce one way or the other may yield results very far from those wanted. Also it is advisable for a dyer who is experimenting with a mineral khaki shade to dye several batches of cloth (on a small scale, of course) in order to accustom himself to the baths and their control, independent of the exact shade wanted. After he is familiar with the process in general, he may alter the quantities of ingredients to produce the exact shade desired.

The following process is attributed to Gatty, who is said to have taken out the first patent covering the details of producing a khaki shade:

A solution of chrome alum is made up to stand at 10° Tw., and to every six gallons of it is added two gallons of a solution of clean copperas (ferrous sulphate) containing five ounces per gallon. The cloth is run through this liquor successively until it is thoroughly impregnated, when it is removed, well squeezed, and without washing, passed through a caustic soda solution standing at 4° Tw., at 150° F., which fixes the oxides of both chromium and iron in the form of insoluble precipitates. The above proportions will yield an olive shade, but should a brown shade be wanted, the dyer increases the proportion of copperas.

Another process consists of passing the cloth through a bath made up of

Sodium Acetate ..... 2½ lbs.
Bichromate of Potash .....10 lbs.
Water to make .....10 gals.

After thorough impregnation the cloth is well squeezed and sulphured to decompose the bichromate which then deposits the green oxide on and in the fibers and between the interstices of the yarn. The cloth is then given a passage through a 4° Tw. caustic soda bath, well washed, and finished. To give a greenish tone, acetate of iron (black iron liquor) may be added to the bath.

A process that has given very handsome khaki shades consists in preparing the cotton with sumac in the usual manner, then treating in the cold with weak nitrate of iron ("copperas iron") and acetate of chrome, then give a passage through a boiling bath of potassium bichromate, followed with a treatment of carbonate of soda, and fixing by a final steaming.

Another process consists in treating the cloth in a bath containing the acetates of both iron and chromium, and to which a small quantity of alizarine blue is added. After thoroughly impregnating the cloth is subjected to a low pressure steaming and the color fixed by passage through a caustic soda bath, washed well, and finished.

A method adapted for continuous dyeing machines is worked out in the following manner. A bath is prepared consisting of

Chromium Acetate Solution, 2° Tw., 4 gals
Iron Acetate Solution, 8° Tw. .....2 gals.

Work the cloth slowly until thoroughly wetted with the liquor and then squeeze. Without washing, pass through a lime boil, as is ordinarily used in the dyeing of the old Nankin buffs, then wash well and dry. The acetate bath is not exhausted and should be preserved by the addition of additional quantities of strong solutions.

The shade of khaki by this process may be varied at will by altering the proportions of iron or chromium in the bath. If chrome predominates, an olive green will result, while if the iron acetate is in excess, the characteristic brown buff is obtained.

In dyeing khaki shades, only the best grades of chemicals should be employed, that is, the choice should center upon technically pure products rather than upon salts or solutions of doubtful origin. If the dyer is competent he may make his own solutions and thereby be certain as to their purity.

Washing is also of the very greatest importance and a plentiful supply of water should be used, so that no unused chemicals remain in the cloth after dyeing; in other words, the cloth as it leaves the dye house should be chemically clean.

The government tests for cotton khaki in force at the present time are given below, and dyers should endeavor by every means to produce approximate shades meeting these tests, after which they can modify the combination so as to match the standard government sample.

The current khaki specification (No. 961 of June 5, 1908) covers everything necessary to guide the manufacturer, but that portion of great interest to the dyer is:

Color.—To be khaki shade, as shown in the sealed standards sample, fast to laundering, perspiration, and climatic influences, such as sunlight, air, and exposure incident to the military service.

The following are the official tests, chemical and otherwise, viz:

Boiling for ten minutes in a solution of soap (80 grains of ordinary laundry soap to one pint of water).

Boiling ten minutes in a solution of soda (20 grains of carbonated soda, pure dried, to one pint of water).

Steeping twenty-four hours in lactic acid, sp. gr. 121, U. S. P.

Steeping twenty-four hours in a solution of citric acid made by using three drams of citric acid to two fluid ounces of cold water.

While these tests are few in number, they are sufficiently severe to prove or disprove the usefulness of the tested cloth for the service. In making the tests the samples should be 4 by 6 inches, and the tests with lactic acid and citric acid are best made in glass photograph developing trays where the swatch may lie flat. The dyer in making these tests should use pure chemicals, such as are usually to be had in the drug store, and not depend upon the ordinary mill supplies. In this connection I came across a dyer who failed with his own soda test be-

cause he used soda ash instead of anhydrous (pure, dry) "sal soda." The ash contained varying quantities of "caustic soda," and which was the cause of himself condemning his own dyeings, which otherwise resisted the government tests for the cotton fabric.

REMOVING FOG FROM DYEHOUSES.

(Continued from September.)

REPORT OF AN INVESTIGATION OF FRENCH DYE HOUSES

[This investigation was made by two French engineers, Turin and Lassaux, under the direction of the Association of French Dyeing Industries (Union des Industries Francaises de la Teinture). Many dye works were visited in the course of the enquiry, which is of value to the American trade because the principles underlying the removal of fog are the same everywhere, although the problem may be affected by different local conditions. —Ed.]

Among other means for increasing the temperature in the dyehouses may be mentioned the circulation of air from other work-rooms, such as dry rooms, where the temperature reaches 100° to 120°. We examined several dyehouses where this method was employed, among them the Masurel works at Tourcoing. Here the hot air was carried from an adjoining work-room by means of ventilating fans to the dyehouse. In the Schaeffer mill at Muelhausen we found the hot air from a singeing room carried to the dyehouse through a pipe about 26 feet long. In one dyehouse at Amiens a large amount of hot air was obtained from the velvet dry room. Very good results were obtained by forcing air from this room into the dyehouse. This method cannot always be employed owing to the large amount of moisture with which the air from some dry rooms is laden; such for example as those in which wool is dried. A dyer at Roubaix cited his experience in confirmation of this statement.

The driving of the ventilators is an important factor in the problem of removing fog. In most cases the mill engine is taxed to its full capacity to drive the regular machines. In several dye works, such as the small establishments around Lyons there was no means for driving a fan. This is one of the things that make it practically impossible to remove the fog from the small dyehouses. The expense of installing motors and fans is so great as to be prohibitory for this class of dyers. Fog removing installations that could be economically installed by large works

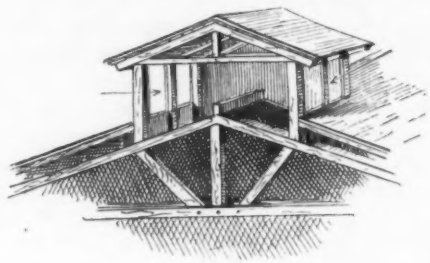


FIG. 4

would mean the ruin of the large number of small dyers.

We visited one hundred dyehouses, forty-five of these had installed the apparatus for removing the fog from the work rooms. Of these 45, 13 obtained very poor results; in 15 the results could be considered only fair; while the remaining 27 were satisfactory. The fog removing apparatus varied widely

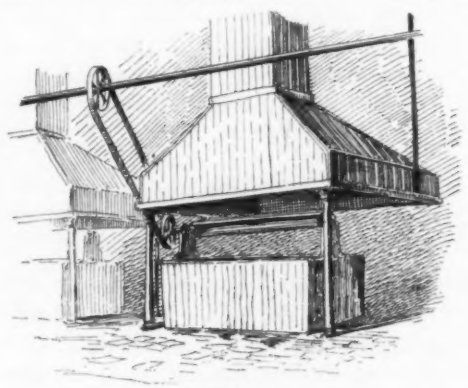


FIG. 5.

in these dye works. In some cases we found that an installation which gave excellent results in one dyehouse would prove a failure in another. This strengthens the opinion that the removal of fog from dyehouses is a special question and the solution must be found by considering the particular conditions existing in each establishment.

The ordinary means adopted consisted in raising the temperature of the work room in

order to evaporate the fog and then remove it by ventilating fans. In no case should the temperature of the work room exceed 72° F. If the temperature is raised above this point the workmen are compelled to work in a hot, damp atmosphere and are exposed to sudden changes when leaving the dye room.

In several dyehouses, including that of Petrus Pierron, we found the air heated by Belgian ovens. In several dyehouses we found good results were obtained by the radiators heated by exhaust steam. These were placed from 6 to 7 feet above the floor where the thickest fog accumulated. There must be enough radiators to give a horizontal layer of hot air so as to reduce the fog and cause it to rise.

In our visits to the dyehouses we discovered a number of different methods of removing the air from the work rooms, among them the following: Monitor roofs, air shafts, ventilating fans.

At one time it was believed that openings in the roof facilitated the exit of fog, but at the present time it is generally recognized that at the best they give very poor results and often result in an increase in the fog. When the wind is in a certain direction the cold air from the outside is driven through these openings into the dyehouse, causing an increase in the fog. For this reason the openings must be closed in winter. Rare exceptions are found in localities where the wind generally blows in one direction. In such a case the openings in the roof may be arranged so as to prevent the entrance of the cold air from the outside and allow the air from the dyehouse to escape. Such an arrangement is shown at Fig. 4.

The same result is obtained by the use of revolving ventilators by which the closed side is always turned towards the wind. In many dyehouses we found the tubs covered with hoods from which chimneys are run through the roof to the outside air. Such an arrangement is shown at Fig. 5. Our observations lead us to believe that under favorable weather conditions the use of these hoods and chimneys with a good heating system would reduce the fog 80 per cent. This percentage can be raised by increasing the number of chimneys, or by fans. The results are still further improved by enclosing the kettle. In one case we found the kettles completely enclosed, doors being provided to permit of the entrance and removal of the goods. The objection to this was the liability of the pieces becoming tangled and damaged while concealed from the view of the attendants.

WATERPROOF IMPRESSIONS ON TEXTILE FABRICS.

An Austrian process for producing waterproof impressions on textiles has recently been patented in this country. The inventor states that the processes heretofore known for producing impressions fast to water on textile fabrics by use of solutions of cellulose nitrates or celluloid, or cellulose acetates, in solvents of comparatively low boiling point, such as amylacetate or formate, have been difficult to bring into general use, because the layers of nitrocellulose or acetyl-cellulose produced on the textiles in the ordinary manner, when of the required thickness, deprive the textile fabrics of their softness to the touch and make them feel more or less stiff, hard or like paper.

Even the addition of various softening agents has not given an entirely satisfactory result, because the harshness to the touch has not been sufficiently improved thereby; moreover, the effect of such agents is deleterious to the fastness of the materials to friction or to the brilliancy of the product, or to their fastness to water or to all these qualities together.

According to the present invention the combinations of nitrocellulose or celluloid or cellulose acetates with organic acid esters of high boiling point, more particularly the esters of phthalic acid, are especially suitable for imparting resistance to water to impressions on textile fabrics, particularly to the effects known as silk finish. Textile fabrics dressed or coated with such combinations do not lose their softness to the touch when sufficient quantities of the combinations are applied. These latter have an extremely high capacity of imparting resistance to water to textile materials when these have been provided with designs applied by means of silk-finishing on goffering rolls.

To the coating compositions there may be also added known dressing or fixing agents, such as for example, blue, resins or albuminous substances, according to the nature of the solvents. For example, 100 parts of nitro-cellulose or celluloid are dissolved together with 50 to 150 parts of ethyl phthalate, in a suitable solvent, such as methyl alcohol, acetone, ethyl alcohol alone or mixed with acetic anhydrid, ethyl acetate or another ester of low boiling point such as amyl-acetate or butyl acetate, the solution is applied as a dressing composition to the textile fabric before or after the printing process.

STREAKS IN COTTON FABRICS.

Manchester, Eng., July 24, 1908.

Editor Textile World Record:

Referring to the several answers furnished in your July issue to "Clinton" (996) regarding streaks in cotton fabrics, I venture to suggest that none give an entirely satisfactory or at any rate a complete explanation of the cause of stains occurring on unbleached cotton goods (without size) left for a few hours in a wet state. There is no doubt that such stains do occur and that the result depends upon many such conditions as the amount of water, the temperature, the extent of external drying when lying in pile, the pressure, the time and so on.

If we however consider for a moment the material we are dealing with, we shall get a better insight of the action that is going on. All cotton, however carefully carded and freed from dust or oil, contains in the natural state from 1 1/2 to 2 1/2 per cent. of matter which is easily soluble in water. Then there are substances, colloids and so forth, lying on the border line between soluble and insoluble, which gradually soften in water, and in the mere mechanical treatment of cotton with water, separate out to some extent as flocculent masses enclosing some of the natural waxes and fats incidental to the fiber. All these substances whether soluble, partially soluble or quite insoluble, have when reduced to dryness distinctly more color than the fiber whence they are derived. The soluble matter gives indeed a residue identical in appearance with extract of beef and suggesting the same substance in smell. Now as soon as the cotton is wet out, these various constituents begin to move about, the soluble portions first, those slightly soluble next and the colloids and insolubles last. The moving forces are of course capilliary attraction, gravity and diffusion, these being hastened or caused by such influences as external drying and the drainage of water away from the base, or collecting there. The physical conditions of the pile vary throughout in point of exposure to air, pressure, wetness and temperature and consequently the various substances other than the cotton itself tend to collect in certain places and to be consequently removed from the bulk. Those points of concentration, taken of course together with the oxidizing effect of the air, must be discolored by comparison with the rest of the goods.

I have no wish to lay the above down as indicating everything that goes on in producing these stains and no one values more than I do the really practical answers already given to the question under consideration, but I think those of us who like to get at the true inwardness of such cases as this may like to know how it appeals to one who has given attention in the past to many similar problems outside the view of the purely practical technologist.

But there is still more in this subject than may yet have met the eye. We scour goods for dyeing merely to get rid of these objectionable matters "other than cotton." We bleach goods simply and solely to get rid of them altogether—or nearly so. And there is no subject connected with cotton more immediately worthy of attention in advancing the industry on its technological side than the study of these substances contained in cotton in the grey state, but merely adherent to or partially combined with the pure cellulose fiber. Until scientific research on these lines is seriously taken up we cannot consider the methods of scouring, dyeing and bleaching to be really understood.

Yours faithfully,

J. H. Lester, M. Sc., F. I. C.,
Manchester Testing House and Laboratory.

DYE RECIPES.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

Recipe No. 145.

Blue on Worsted Yarn.

Alizarine Blue C P R on 100 lbs. worsted yarn. First mordant the yarn in a bath of

3 lbs. Potassium Bichromate,
2 lbs. Tartar,

entering at 140° F., bringing slowly to a boil and boiling for at least one hour.

Then dye in a bath made up with

4 lbs. Alizarine Blue C P R.
(C. Bischoff & Co., 451 Washington St., New York.)
1 lb. Acetic Acid.

Enter the yarn at ordinary temperature and bring slowly to a boil and dye at a boil for one hour, then add

Acetic Acid

in sufficient quantity to exhaust the dye bath, and continue the boiling for ½ hour longer.

Alizarine Blue C P R stands sunlight and fulling excellently.

Recipe No. 146.

Pink on Bleached Cotton Yarn.

Tetrazo Pink G G N on 100 lbs. bleached cotton yarn. Prepare the dye bath with

½ lbs. Tetrazo Pink G G N.
(American Dyewood Co., 154 William St., New York.)
20 lbs. Common Salt.
½ lb. Soda Ash.

Dye at a boil for one hour.

Tetrazo Pink G G N is recommended where good fastness to light and washing is required.

When used on Union goods the wool is dyed a trifle yellower than the cotton. It is of especial interest for the dyeing of artificial silk.

Recipe No. 147.

Black on Worsted Yarn.

Acid Alizarine Black K S R on 100 lbs. worsted yarn. Prepare the dye bath with

5 lbs. Acid Alizarine Black K S R.
(Kalle & Co., 530 Canal St., New York.)
5 lbs. Acetic Acid.

Enter yarn at 100° F., bring slowly to a boil and dye at a boil for ¾ of an hour. Then add

1 lb. Sulphuric Acid

and boil 15 minutes longer.

Finally add

2 lbs. Potassium Bichromate

and after boiling 30 minutes wash and dry.

Acid Alizarine Black K S R dyes level, stands the light test very well, and is particularly adapted for dyeing with resist stripes, as it leaves the latter clear.

Recipe No. 148.

Brown on Cotton Yarn.

Triazol Brown Sooo on 100 lbs. cotton yarn. Prepare the dye bath with

1½ lbs. Triazol Brown Sooo.
(Geisenheimer & Co., 189 Front St., New York.)
3 lbs. Soda Ash.
20 lbs. Common Salt.

Enter at 180° F., and dye at a boil for one hour.

Triazol Brown Sooo possesses good coloring power, is cheap, fast to acids, and of medium fastness to light.

Recipe No. 149.

Violet on Cotton Yarn.

Triazol Violet R R on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Triazol Violet R R.
(Geisenheimer & Co., 189 Front St., New York.)
1 lb. Soda Ash.
20 lbs. Common Salt.

Enter at 180° F., and dye at a boil for one hour.

Triazol Violet possesses good fastness to light and acids.

Recipe No. 150.

Green on Worsted Yarn.

Fast Chrome Green on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Fast Chrome Green.
(Read, Holliday & Sons, 7 Platt St., New York.)
4 lbs. Sulphuric Acid.
15 lbs. Glauber's Salt.

Enter at 120° F., and dye at a boil for one hour.

Fast Chrome Green is exceedingly fast to light, possesses good leveling properties, and is fairly fast to milling. It will be found valuable in the dyeing of yarn for carpet and worsted trade.

Recipe No. 151.

Orange on Cotton Yarn.

Algole Orange R Paste on 100 lbs. cotton yarn. Prepare the dye bath with

10 lbs. Algole Orange R Paste.
(Farbenfabriken Co., 66 Lafayette St., New York.)
6 lbs. Soda Lye, 52° Tw.
8 gals. Hydrosulphite Solution, 27° Tw.

The dyestuff should be first stirred with warm water, and then added together with the soda lye to the dye bath, the hydrosulphite solution being added last. The temperature is raised to 70-75° F., whereby the dyestuff will dissolve in a short time.

The dyeing is carried out at ordinary temperature from ¾ to 1 hour, the material squeezed well, exposed to the air for a short time, rinsed in water acidulated with from ¼ to ½ lbs. sulphuric acid per 25 gallons. It is finally rinsed again, soaped, hydroextracted and dried.

The 27° Tw. Hydrosulphite solution may be prepared by slowly adding

3 lbs. Zinc Powder to
2¾ gals. of Bisulphite of Soda Solution, 72-78° Tw.

While adding the zinc powder to the Bisulphite, the temperature of the solution should not rise above 100° F., and it is therefore advisable to cool it down with ice. After adding the zinc powder, stir well for 1/2 hour, then allow to stand for one hour, and filter the solution through a piece of calico. To this solution add milk of lime, which is prepared by slaking

¼ lb. Quick Lime with
1 pt. of Water.

Stir well. After standing 2 hours, filter the solution and add

1¼ ozs. of Soda Lye, 76° Tw.

for every gallon of liquor. The solution is then made up to 27° Tw. with water.

Algole Orange R Paste possesses remarkable fastness to all of the ordinary color destroying agencies.

Recipe No. 152.

Blue on Cotton Yarn.

Immedial Direct Blue 4 B Extra Conc. on 100 lbs. cotton yarn. Prepare the dye bath with

8 lbs. Immedial Direct Blue 4 B Ex. Conc.
(Cassella Color Co., 182 Front St., New York.)

16 lbs. Sodium Sulphide, Crystals.
6 lbs. Soda Ash.
25 lbs. Glauber's Salt.

Dissolve the dyestuff together with the sodium sulphide, and add to the dye bath which already contains the soda ash and Glauber's Salt. Boil up the bath, shut off the steam, and dye one hour just below a boil, keeping the material below the surface of the liquor as much as possible.

Immedial Direct Blue 4 B Ex. Conc. possesses excellent fastness to light, and very good fastness to washing and acid.

Recipe No. 153.

Pink on Bleached Cotton Yarn.

Tetrazo Pink G U on 100 lbs. Bleached Cotton Yarn. Prepare the dye bath with

½ lb. Tetrazo Pink G U.
(American Dyewood Co., 154 William St., New York.)
20 lbs. Common Salt.
½ lb. Soda Ash.

Dye at a boil for one hour.

Tetrazo Pink G U is recommended where good fastness to light and washing is required.

When used on Union goods the wool is dyed a trifle yellower than the cotton. It is of especial interest for the dyeing of artificial silk.

Recipe No. 154.

Violet Black on Cotton Yarn.

Oxy Diamine Violet B F on 100 lbs. cotton yarn. Prepare the dye bath with

4 lbs. Oxy Diamine Violet B F.
(Cassella Color Co., 182 Front St., New York.)
30 lbs. Common Salt.

Enter at 180° F., and dye at a boil for one hour. Then rinse and diazotize in a cold bath made up with

3 lbs. Sodium Nitrite.
12 lbs. Hydrochloric Acid, 32° Tw.

Then develop in a bath made up with

1 lb. Beta Naphthol.
1 lb. Caustic Soda Lye, 76° Tw.

Oxy Diamine Violet B F gives a bright violet which upon diazotizing passes into a violet black of good fastness.

Recipe No. 155.

Scarlet on Worsted Yarn.

Fast Scarlet 5 o on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Fast Scarlet 5 o.
(Read, Holliday & Sons, 7 Platt St., New York.)
4 lbs. Sulphuric Acid.
15 lbs. Glauber's Salt.

Enter at 120° F., dye at a boil for one hour.

Fast Scarlet 5 o is exceedingly fast to light, possesses good leveling properties, and is fairly fast to milling. It will be found valuable in the dyeing of yarn for carpet and worsted trade.

Recipe No. 156.

Green on Worsted Yarn.

Fast Chrome Green 3 G on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Fast Chrome Green 3 G.
(Kalle & Co., 530 Canal St., New York.)
5 lbs. Acetic Acid.

Enter at 80° F., raise slowly to a boil and dye at a boil for 45 minutes. Then add

1 lb. Sulphuric Acid

and boil for ½ hour, then add

1½ lbs. Potassium Bichromate

and continue the boiling for ½ hour. Wash and dry.

Fast Chrome Green 3 G dyes level, stands the light test very well and is specially adapted for dyeing with resist stripes, as it leaves the latter clear.

Recipe No. 157.

Blue on Cotton Yarn.

Naphtogene Blue 2 R on 100 lbs. cotton yarn. Prepare the dye bath with

5 lbs. Naphtogene Blue 2 R.
(Berlin Aniline Works, 213 Water St., New York.)
30 lbs. Glauber's Salt.

Enter at 180° F., and dye at a boil for one hour.

Then rinse and diazotize by working for 15 to 20 minutes in a cold bath made up with

3 lbs. Sodium Nitrite.
12 lbs. Hydrochloric Acid, 32° Tw.

Then develop in a cold bath made up with

1 lb. Beta Naphthol.
1 lb. Caustic Soda Lye, 76° Tw.

Naphtogene Blue 2 R produces dyeings which are very fast to washing and light.

Recipe No. 158.

Yellow on Cotton Yarn.

Toluylene Yellow G on 100 lbs. cotton yarn. Prepare the dye bath with

3½ lbs. Toluylene Yellow G.
(Farbenfabriken Co., 66 Lafayette St., New York.)
2 lbs. Soda Ash.
20 lbs. Common Salt.

Enter at 180° F., and dye at a boil for one hour.

Then after-treat for ½ hour at 120° F. in a bath made up with

3 lbs. Chrome Alum.
3 lbs. Acetic Acid.

Toluylene Yellow G dyes easily level and possesses good fastness to washing.

Recipe No. 159.

Black on Worsted Yarn.

Agalma Black 4 B on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Agalma Black 4 B.
(Badische Company, 128 Duane St., New York.)
4 lbs. Sulphuric Acid.
15 lbs. Glauber's Salt.

Enter at ordinary temperature, bring slowly to a boil, and dye at a boil for one hour.

Agalma Black 4 B is a bluish black, and will be found a valuable color for the dyeing of woolen yarn and piece goods.

Recipe No. 160.

Blue on Bleached Cotton Yarn.

Zabesi Pure Blue R on 100 lbs. bleached cotton yarn. Prepare the dye bath with

1 lb. Zambesi Pure Blue R.
(Berlin Aniline Works, 213 Water St., New York.)
30 lbs. Glauber's Salt.

Enter at 180° F., and dye at a boil for one hour.

Then rinse and diazotize by working for 15 to 20 minutes in a cold bath made up with

3 lbs. Sodium Nitrite.
12 lbs. Hydrochloric Acid, 32° Tw.

Then develop in a cold bath made up with

1 lb. Beta Naphthol.
1 lb. Caustic Soda Lye, 76° Tw.

Zambesi Pure Blue R produces dyeings which are very fast to washing and light.

Mill News.

Those interested in receiving early and more complete investigated information of projected new mills, enlargements, improvements, fires facts and gossip of the trade are referred to the Textile Advance News, issued weekly by the publishers of the Textile World Record, at $15.00 per year.

COTTON.

New Mills.

*Alabama, Bon Air. The directors of the Coosa River Spinning Co. expect to begin manufacturing about November 1. Progress is being made in the work of setting up equipment, which consists of 6,120 ring spindles. Machinery is arriving daily, and the engine and boiler have been received and set up. 10s and 14s hosiery yarns will be the product. This company has capital stock of $150,000. D. L. Lewis of Sycamore, Ala., is president, and John F. Lewis of this place is treasurer and buyer. George F. Brietz has been engaged as superintendent. The product will be sold through DeCort Yarn Co. This concern was formerly noted under Childersburg, Ala., but a new post office has been established, and communications should be addressed as above.

*Alabama, Gaylesville. The equipment of the new Gaylesville Cotton Mills will be from 4,000 to 5,000 spindles. It was stated last week that construction work on the plant will begin in about 30 days. Other particulars have been given. Contracts have not been awarded.

*Canada, Montreal. As soon as snow is off the ground in the spring of 1909 the proposed bleacherected. As previously reported, manufacturing will begin in the new spinning and weaving departments about October 1. We are advised that the new bleachery will have capacity of 50 tons.

*Georgia, Douglasville. The Lois Cotton Mills, incorporated about a year ago, and later reorganized to carry out the original plans are practically ready for manufacturing, and start operations November 1. In addition to the officers, who have been reported from time to time, C. H. Cole will be manufacturing superintendent, and W. E. Geer will be buyer. 10,000 ring spindles and 250 looms are being set up and will be run on 39-inch print goods.

*North Carolina, Charlotte. The Jewel Cotton Mills, incorporated in June, have not started to build a plant. They state that building material is coming down and they are waiting for the lowest point to be reached before buying. They state further that they are anxious to have building operations start soon so as to get the buildings under cover before cold weather. W. W. Hagood is pres., W. A. Watson is vice pres., and T. J. Lillard is sec., treas. and buyer. The company has an office in the 4 C's Bldg. The Jewel Cotton Mills have capital stock of $250,000 and will equip a mill with 5,000 spindles for manufacturing fine combed yarns.

*North Carolina, Charlotte. The Savona Mfg. Co. recently reported incorporated with capital stock of $100,000 will install 100 jacquard looms for making fancy towels, bureau scarfs, etc. They will buy cotton yarn from 5s to 30s. Manufacturing on some of the machinery is expected to begin in about two weeks. Alexander & Garsed, the machinery firm of this place, are the incorporators of the company and will be the Charlotte representatives. A. D. Smith & Co. of New York will sell the product. It was previously reported that machinery was being installed in the Tompkins Bldg.

*North Carolina, Davidson. Spinning was begun in the new Delberg Cotton Mills on Monday, September 28. Roving for the present will be furnished by the Linden Mfg. Co., which is nearby and closely allied in management with the new mill. 8s to 24s hosiery yarns will be the product. As previously reported, the capital stock of this concern is $50,000. J. P. Munroe is president and buyer, F. J. Knox is treasurer and H. H. Hartwell is superintendent. 4,000 spindles have been installed, also complete electric power equipment.

*North Carolina, Stony Point. The new Stony Point Mfg. Co. has just completed and put into operation its plant. 4,000 spindles have been installed for the manufacture of 18s to 22s cotton yarns. M. K. Steele is pres., A. L. Watt is treas. and Wm. Steele is supt.

South Carolina, Olanta. D. W. Alderman of Alcola, S. C. and John McSween of Timmonsville are interested in the organization of a company to erect a cotton mill at this place. They contemplate a $200,000 stock company for spinning cotton yarn.

*South Carolina, Shelby. The buildings for the new Ella Manufacturing Co. have been completed, and the equipment of machinery is now being installed. As reported in 1907, when the construction work started on this company's plant, the equipment will be 5,000 ring spindles and 125 looms for the manufacture of convertible goods. The main building is 76 by 376 feet, and has been erected at a cost of about $25,000. Electric power will be used and will be transmitted from the local power lines of the Southern Power Co. of Charlotte, N. C. Stuart W. Cramer of Charlotte is the company's engineer in charge of building and equipping the mill.

Tennessee, Knoxville. Wm. T. Lang, for many years superintendent of the Brookside Cotton Mills, will organize a new company with capital stock of $100,000 for erecting and operating a cotton mill in this section. The location has not been given out.

Enlargements and Improvements.

Alabama, Anniston. There is a probability that the capacity of the Anniston Yarn Mills will be largely increased at an early date. The matter was brought up at a meeting of the stockholders, but definite action was deferred. The plant has been continuously operated during the year, and a good dividend has been paid on the capital stock.

*Connecticut, Danielson. The west foundation wall for the addition to the plant of the Danielson Cotton Co. has been completed. The wall is 158 ft. long and 32 in. thick. The remaining sections of the foundation will be up within a few weeks and ready for the brick work.

Connecticut, Killingly. The carding department of the Williamsville Mfg. Co. is being operated overtime. 1,000 spindles have recently been added to the spinning room.

Georgia, Columbus. The Swift Mfg. Co. is making extensive alterations in the card room and has placed a repeat order for revolving flat cards with the Howard & Bullough American Machine Co., Ltd., Pawtucket, R. I.

Georgia, La Grange. At a meeting of the stockholders of the Unity Cotton Mills, it was decided to build immediately a new cotton mill about the size of the present plant. It will not be necessary to assess the stockholders for the new mill, the large surplus which has been accumulating during the present mill's 6 1/2 years of operation being sufficient for the purpose. The present plant contains 10,380 ring spindles, 3,000 twisting spindles, 102 broad and 30 narrow looms, on which cotton duck and skein yarns are manufactured. C. V. Truitt, pres., and Fuller E. Callaway, treas., have the work of contracting for the new plant in charge.

*Georgia, West Point. The new mill erected for the West Point Mfg. Co. is expected to be in full operation within a few days.

Massachusetts, Conway. The Tucker & Cook Mfg. Co. have rebuilt their old dam, largely increasing the water power. The mill is in full operation at present. No other changes are being made or contemplated. 3,300 ring spindles and 700 twisting spindles are operated on knitting cotton, darning cotton, crochet cord, macrama cords and twines. The capital stock is $5,000. Arthur M. Cook is pres. and treas. and Richard H. Cook is agent and buyer. A dye house is operated in connection with the plant.

*Massachusetts, Dodge. It has been decided to manufacture cotton cloth in the plant of C. W. Pike. Satinets have been manufactured previously, but we reported in the spring that Mr. Pike was interested in a glove manufacturing concern and would probably use a part of his plant in the new business. The glove manufacturing corporation has been incorporated in New Jersey and will be known as Grey Rock Glove Co. The capital stock is $50,000. E. E. Pike, a son of C. W. Pike and formerly superintendent of the plant, will be manager of the new company. Work of manufacturing gloves will be done in Woonsocket, space having been secured and sewing machines contracted for. Mr. Pike estimates that his plant will give a production of about 1,500 yards of cloth daily.

Massachusetts, Fall River. The American Linen Co. is making extensive alterations to the picker plant and has placed an order for picking machinery with the Howard & Bullough American Machine Co., Ltd., Pawtucket, R. I.

*Massachusetts, Lawrence. The new water wheel being installed by the Atlantic Cotton Mills is a Hercules 48 inch wheel and replaces the last of the old Borden wheels. The upright boiler being set up was built at Fitchburg, Mass., by the Dilling Mfg. Co. No other machinery is contracted for and none will be added for some time. The Atlantic Cotton Mills have run throughout the past year. Improvements have been made as fast as they have earned the money, and the loom schedule shows an increase of about 300 looms during the last few years and preparatory machinery in the same proportion.

Massachusetts, Lawrence. The old water wheels of the Pacific Mills are being taken out and replaced by wheels of the latest and most approved type. According to the agreement with the Essex Co., owners of the water power, payment is made on a basis of the amount of water used, and the mill officials wish to get the largest power possible out of it. The construction work is progressing on the new addition to the worsted department.

*Massachusetts, Newburyport. The shut down of the Peabody Mfg. Co.'s plant will not be of long duration as previously reported. They are about to install new machinery and manufacturing will be resumed as soon as the new equipment is in place, which will be within a few weeks. They advise that machinery contracts have been awarded. This company has capital stock of $117,000 and operates 8,384 mule spindles, 25,232 ring spindles and 820 looms.

Massachusetts, Plympton. A quantity of new machinery is being installed on the second floor of the mill of the Bullock Thread & Twine Co.

*Massachusetts, Winchendon. Construction work on the new cotton mill for N. D. White & Sons has been completed by J. W. Bishop & Co., the contractors. The new mill is 304 by 54 ft., 2 stories high, and of modern construction. 224 looms will be installed and a cloth room and machine shop equipped.

*New Hampshire, Exeter. The installation of new looms in the plant of the Exeter Mfg. Co., displacing old machinery, which was previously reported, will be continued until 500 new looms have been installed. When the changes have been completed, the plant will have an increase of about 20 looms over the old equipment.

New York, Jamestown. The Jamestown Cotton Mills have placed a repeat order for speeders with the Howard & Bullough American Machine Co., Ltd., Pawtucket, R. I.

*North Carolina, Concord. It is reported that the Franklin Cotton Mills is installing 5,000 spindles in the new mill completed by them last fall.

*North Carolina, Concord. Good progress is being made on the new warper room being built for the Young-Hartsell Mills Co. The building is 100 by 50 ft., one story high. No other improvements will be made at this time.

*North Carolina, Roanoke Rapids. The setting up of machinery in the new building recently completed for the Roanoke Mills Co. will be begun shortly. It is stated that 8,000 spindles and 200

looms will be installed. The mill has run full time all summer and has plenty of orders on hand at the present time. Colored cotton goods and towels are manufactured on an equipment at present of 15,000 ring spindles and 600 looms.

*North Carolina, Shelby. It is reported that plans have been completed by the Shelby Cotton Mills for the erection of an addition to hold the 6,500 new spinning spindles and 2,500 twisting spindles which we reported in August would be added. It is understood that electric power equipment which will be used has not been contracted for.

Pennsylvania, Aston Mills. A number of improvements are being made in the dyeing department of the May Mfg. Co. New dyeing machines for dyeing cotton and yarns are being installed.

*Rhode Island, Albion. Work on the new mill for the Valley Falls Co. is progressing favorably and the building is now rapidly approaching completion. It is expected that within two weeks the roof will be put on and a short time later interior work will be sufficiently advanced to permit of the installation of machinery. Details of this enlargement have been given.

Rhode Island, River Point. Necessary repairs have been made in the Royal Mills and the new fly wheel installed. All the machinery is in readiness to be started but the large belt used on the engine has not been received. On June 18 the fly wheel burst, damaging more than one-third of the mill machinery and since that time some of the departments have been run nights. The plant will start up in full within a few days.

South Carolina, Hartsville. The Hartsville Cotton Mills will add 4,000 spindles to its present equipment. 33,000 spindles and 800 broad looms are run on wide print goods.

South Carolina, Liberty. The capital stock of the Liberty Cotton Mills has been increased from $175,000 to $200,000. Late in 1907 a 30 ft. addition was erected to the main building and 2,500 spindles added.

South Carolina, Reedy River Factory. Damage to the Reedy River Mfg. Co. caused by the flood is estimated at about $15,000 and will be repaired at once. The flume was washed away and the machine shop damaged to some extent. James H. Maxwell is pres. and treas. Sheetings and drills are manufactured on 12,000 ring spindles and 371 looms.

*South Carolina, Spartanburg. The installation of new machinery by the Saxon Mills requires the building of a cloth room extension with basement. The dimensions of the building are 130 by 70 ft. This structure is nearly completed, having been designed by J. E. Sirrine, mill architect and engineer of Greenville, S. C. Practically all necessary machinery and other equipment have been purchased.

South Carolina, Tucapau. A solid masonry wall 150 ft. long will be built at the power plant of the Tucapau Mills. The original wall was carried away by the high water. A local contractor will receive the contract.

Mills Starting Up.

Connecticut, Willimantic. It is announced that the finishing department of the local plant of the American Thread Co. has returned to full time permanently. The entire plant will be running on full time by November 1.

Georgia, Dallas. The Paulding County Cotton Mfg. Co. which has been shut down for several weeks, has started up on full time. Single soft hosiery yarns on cones are manufactured on 10,000 ring spindles.

Mississippi, Natchez. Operations have been resumed in the mill of the Natchez Cotton Mills Co. after a shut down lasting three weeks. Extensive repairs were completed. Brown sheetings and drills are manufactured on 22,500 ring spindles and 636 looms.

*Rhode Island, North Scituate. A shut down of three weeks has been completed by the North Scituate Cotton Mills. Some of the departments are running until 9 o'clock in the evening. Mosquito netting, canopies, crinolines and similar goods are manufactured on 5,600 ring spindles, 4,400 mule spindles and 162 looms. 30s to 90s cotton yarns are bought.

South Carolina, Columbia. The mills of which Lewis W. Parker is president will run full time in the future unless hindered by some unavoidable accident. This includes the Capital City Mills, the Granby Cotton Mills, the Olympia Cotton Mills and the Richland Cotton Mills. The last two have been run practically full time throughout the depression. The Granby and Capital City were operated 4 days a week during August. It will be necessary to run the Capital City and Granby Mills for the present week at night, as the power will be furnished by the Olympia Mills until the breaks at the canal are repaired. The Columbia Mills of the Mt. Vernon Woodbury Cotton Duck Co. will lose about $10,000 on account of damage to machinery in the power house caused by the high water.

Texas, Gonzales. It is rumored that manufacturing will soon be resumed in the Gonzales Cotton Mills. The plant has been shut down for several months, and at one time it was rumored that the company would be reorganized. 5,000 ring spindles and 150 looms were operated on sheetings and drills.

Texas, West. The Brazos Valley Cotton Mills, which have been closed down for several weeks to repair machinery and reset boilers, have resumed manufacturing with full force of hands. Sheeting and drilling are manufactured on 6,140 ring spindles and 210 looms.

Mills Shutting Down.

Mississippi, Meridian. It is reported that the Meridian Cotton Mills is running out the stock in process preparatory to shutting down indefinitely.

Plain and fancy shirtings, cheviots, etc., are manufactured on 520 ring spindles and 400 narrow looms.

New Jersey, Newark. The plants of the Clark Thread Co. of this place and at Harrison are shut down for ten days.

WOOLEN.

New Mills.

*Massachusetts, Monson. The foundation of the new Ellis mill, particulars of which have been given, is completed and the contractor who will erect the building has a force of men on the ground ready to begin work. A threatened strike among the construction companys employes was averted by discharging the non-union men.

*New York. Watervliet. The Roy Woolen Company has nearly finished the improvements to its mills, and is preparing to start manufacturing shortly. This company was incorporated in July with capital stock of $75,000 and leased one of James Roy & Co.'s factories for the manufacture of carriage cloths and dress goods. Charles P. Roy of Troy, D. W. Tillinghast of New York, and Elmer Winters of this place are the officers of this company.

*Rhode Island, Providence. The new Colored Worsted Mill has not started manufacturing as planned, being detained by the delay in delivery of drawing and twisting machinery. It is understood that this equipment is now in transit. A small amount of wool has been run through the combs to try them out. Joseph Lister of the Centredale Worsted Mill is interested in the new plant. 2/20s to 2/60s colored worsted yarns will be the product.

*Rhode Island, Providence. The Elston Worsted Co., the concern that purchased the old Rhode Island Worsted plant in Addison Place, has begun the production of yarns and expects to be running in full shortly. Within a few days arrangements have been made for the purchase of land immediately in the rear of the plant and it is the intention to build a weave-shed early in the spring of 1909. The yarns being spun are intended for the Elston Worsted Co.'s plant in Wallingford, Pa., where 40 broad looms are operated on fancy worsted dress goods. The Elston Worsted Co. has capital stock of $50,000. Arthur Elston is the head of the company.

Enlargements and Improvements.

*Connecticut, Central Village. The proposed addition to the plant of the Central Worsted Co., Inc., will not be erected until 1909. This company has discontinued night work but is running the full day schedule.

Connecticut, Thompsonville. The Upson & Martin Carpet Co. was shut down for one-half day during the process of changing over the motive power of the plant from steam to electricity. Power is furnished by the Northern Connecticut Light & Power Co.

*Connecticut, Torrington. Contracts for the piping of the Warrenton Woolen Co.'s new power station have been awarded. Power piping and piping for manufacturing purposes will be done by G. M. Parks Co., Fitchburg, Mass.

*Maine, Foxcroft. Construction work is progressing rapidly on Mayo & Sons new woolen mill. The wheel pit has been completed, the wheels set and the wheel house is now being erected. Work on the mill building has a very good start. It is of reinforced concrete construction; the work is being done by the Concrete Construction Company of Boston. The mill pond is rapidly filling with water and the mill will shortly start up.

*Massachusetts, Clinton. In about ten days M. J. Kane, contractor, will begin tunnelling under Main St. for the location of the railroad tracks from the Boston & Maine R. R. which will be used to haul coal and other supplies to the new power house of the Bigelow Carpet Co. The weaving department of the Bigelow Carpet Co. is being operated 5 days a week instead of on the 4-day schedule which has prevailed for a number of months.

*Massachusetts, Lawrence. Some of the new looms for the Selden Worsted Mill have arrived and preparation is being made for starting them on worsted dress goods.

Massachusetts, Lowell. The Merrimack Woolen Co. is contemplating building a bridge to connect the present wool scouring department on the east side of Beaver Brook with the main mill across the stream.

*Massachusetts, North Andover. The new boiler house for the Brightwood Manufacturing Co. is still under construction. It will be a one-story brick structure, 50 by 65.

Massachusetts, Spencer. A portion of the office building of the Priscilla Woolen Co. has been set off as a sales room where the products of the mill, consisting of overcoatings, dress goods, etc., are on sale. E. A. Evans, president and manager of the mill, states that the concern has many orders ahead for immediate delivery. The mill is now running full time. Three sets and 17 looms are operated.

*Massachusetts, Uxbridge. A new crabbing machine and two new dyeing machines have been added to the dyeing and finishing departments of the Uxbridge Worsted Co. No further improvements are in view at present. The mill is running full time on worsted and cotton goods. C. A. Root is manager.

New Hampshire, Harrisville. The old water wheel at the Cheshire Mills is being repaired.

*New Hampshire, Hinsdale. Manufacturing has been resumed in the plant of Charles J. Amidon & Sons, the work of installing a new water wheel to replace the old one having been completed.

*New Jersey, Trenton. Reports that the Princeton Worsted Mills have bought land adjoining their mill are correct, but they do not intend to build an addition at present. They are increasing the machinery equipment from 76 looms to 100 looms, with additional machinery required to balance it. For this increase there is sufficient space in the present building. John W. Nary is treas., A. Schwarz is pres., and Wm. C. Chave is selling agent.

*New York, Auburn. John W. Rice, the new owner of the Golden Fleece Blanket Co. advises that the property is undergoing extensive repairs and it will be several weeks before they are ready to start the manufacture of blankets.

Oregon, Bandon. A 150 h. p. boiler has been set up in the Bandon Woolen Mills. This company is reported to have large orders ahead which will keep the plant running for 12 months.

*Pennsylvania, Philadelphia. The new addition to the Shelbourne Mills, Kensington Ave. and Westmoreland Ave., will be equipped with machinery for twisting, finishing and weaving, which will enable the company to double the capacity of the plant. They are manufacturers of men's wear, operating 100 looms and selling direct.

Pennsylvania, Philadelphia. As an indication that business in the textile trade is improving, Messrs. Lindsay, Hyde & Co., 2130 E. York St., report that they have just shipped six new worstel reels to the Wood Worsted Mills of Lawrence, Mass., and have received a repeat order for four more machines from Thomas Wolstenholme Sons & Co., Frankford Ave. and Westmoreland Sts.

Pennsylvania, Philadelphia. The Shachamaxon Worsted Company, who have recently had erected a new addition to their mill at Allegheny Ave. and Hancock St., which practically doubled its size, are having built another 5-story wing of brick. This new addition, it is said, will be used by the company as a wareroom for their goods, as they are now arranging for the removal of their offices and salesrooms from their present building on Market St., above 5th, to the corner of 11th and Market Sts., to a new building in which they have recently leased quarters. They are manufacturers of piece dyes and fancy worsteds on 125 looms, which they sell direct.

Pennsylvania, Philadelphia. A. G. Gordon & Co., recently reported by us as removing their Delwood Mills from Mascher and Somer Sts., to Frankford in the Bromiley Mills, it is said have installed 18 new looms, making their equipment 32 in all, which they are operating on upholstery goods and dress goods, which they sell direct.

Pennsylvania, Philadelphia. Pearce & England's Anchor Combing Works at Hancock and Huntingdon Sts., is now in full operation, the proprietors claiming that they have a large amount of business on hand. The plant, which at present contains 2 worsted combs, 3 cards, 1 picker and 1 willow, will be augmented by an addition of two more cards and the same number of combs. They are commission combers of tops from 3/8 down, and report the plant running to its fullest capacity.

Rhode Island, Woonsocket. Construction work on a storehouse 100 by 40 ft. has been completed for the Alsace Worsted Co. Plumbing, dyeing and sprinkling apparatus will be installed shortly.

*Virginia, Bedford City. The proposed addition to the plant of the Bedford Mills Co. will be one story high, 50 by 77 ft., of brick construction. It will be used as a burling, specking and shipping department. No new machinery will be installed at present.

North Carolina, Winston-Salem. John T. Patrick of Wadesboro, N. C., is interested in the organization of a company to establish a knitting mill at this place.

Ohio, Frazeysburg. The Aglen Glove Co. has been incorporated with capital stock of $2,000 for the manufacture of knitted gloves. The names of the incorporators have not been given out.

Pennsylvania, Norristown. The Wildman Manufacturing Co., builders of knitting machinery, report that the outlook is much brighter, as they are receiving inquiries from various sections of the country.

Pennsylvania, Philadelphia. Jacob Bower, general manager of the Standard Machine Co., reports that his company is quite busy. They are receiving many orders for their machines and are shipping them to the various knitting mills as fast as they can be turned out.

Pennsylvania, Philadelphia. The Charter Hosiery Co., through their attorneys, Bamberger, Levi & Mandel, have offered a settlement of claims outstanding against the company on a basis of 33 1/3 per cent. The plant is located at Wakefield and Ashmead Sts., Germantown, where they are manufacturing women's and children's seamless cotton hosiery, operating about 60 knitters and selling the product through New York.

Pennsylvania, Reading. The 1,500 employes of the Nolde & Horst Co., who have been on short time for some weeks, have resumed full time.

*Pennsylvania, Reading. At a meeting of the creditors of the bankrupt estate of Dreisel & Ripka, hosiery manufacturers with plant at 5th and Court Sts., an agreement was reached whereby the proposition of 30 per cent. was accepted and application will be made to the United States Court to approve the same.

Pennsylvania, West Leesport. Business is brisk at the plant of Miller & Balthaser, a large shipment of goods having recently been consigned to Litt Brothers of Philadelphia.

*Rhode Island, Pawtucket. The petition of the Lumb Knitting Co. for permission to locate a steam boiler at the corner of Central and Robinson Aves. was granted by the Board of Aldermen.

*Tennessee, Bristol. An order for 12,000 pairs of half hose has been received by Ed. P. Jones, who early in the year started a new plant in this city. This assures a busy plant for some weeks.

Texas, Beaumont. A party connected with the selling of hosiery has talked over the project for building a knitting plant at this place. The matter has not been decided definitely, but there are possibilities that such a plant will be established as the suggestion was very favorably received.

*Virginia, Norfolk. In August it was reported that the Berkeley Knitting Mills had resumed manufacturing under the direction of M. Lankford, receiver. A few days ago the plant was put on the full time schedule, and additional hands are being employed as fast as machinery can be put in running order. It is now said the prospects are bright for steady work throughout the winter.

Virginia, Roanoke. A suit has been instituted to have the Roanoke Mills placed in the hands of a receiver and wound up. E. W. Tinsley, pres. and treas. of the company, who has considerable invested in the stock of the company, has decided to make the following proposition to creditors: He will pay in cash in settlement of the claims, 25 per cent. Mr. Tinsley is of the opinion that if the assets of the company are sold, the creditors will not realize this amount in cash and he makes this proposition in the hope that he may be able to reorganize and start the mill again. The Roanoke Knitting Mills has an equipment of 150 knitting machines and manufactures misses' and children's ribbed hosiery, dyeing and finishing the product. Branch plants were operated in Martinsville, Luray and Pulaski.

Mills Starting Up.

Connecticut, Danielson. A number of orders are being received by the Danielson Worsted Co. and the mill has resumed operations. The company has capital stock of $15,000 and manufactures fancy worsteds on 12 looms. They buy worsted yarns 2/20s to 2/24s and cotton yarns 2/12s to 2/40s.

*Maryland, Dickeyville. Manufacturing has been resumed in the Ashland Mfg. Co.'s plant. It was reported in July that this property had been purchased by J. Hurst Purnell of Baltimore and Dr. R. L. Gould of New York. The company has been reorganized with J. Hurst Purnell, pres. and buyer, and J. C. Wilmerding, Jr., treas. Wellington, Sears & Co. are the selling agents.

*Massachusetts, North Dana. The woolen mill of Crawford and Tyler has resumed manufacturing. Meltons and suitings are manufactured on two sets and 24 looms, product being sold through Stoney & Starkey, 59 Leonard St., New York City. They are interested in making improvements to the finishing department.

Massachusetts, South Groveland. The Groveland Mills, which have been shut down for a month on account of depression in the market in their line of goods, have resumed manufacturing on a schedule of 4 1/2 days a week. A. D. Veasey is proprietor. Dress goods and flannels are manufactured on 41 sets and 254 looms.

*Pennsylvania, Chambersburg. The owners of the Chambersburg Woolen Co. are again in charge of the property and as reported last week have started up the plant, Henry E. Holtsizer of Williamsport, who was connected with the concern about ten years ago, being in charge as superintendent. The company went into the hands of receivers Jan. 7 last, but on July 1 a cash settlement was accepted by all creditors of the company and payments made. Five sets and 30 broad looms are operated on cloakings, ladies' dress goods and worsteds. The capital stock of this company is $100,000. D. K. Appenzellar is pres. and D. K. Appenzellar, Jr., is sec., treas. and buyer. A dye house and finishing department are operated in connection with the plant. The product is sold direct.

Rhode Island, Providence. The Blanding Mfg. Co.'s plant, which has been idle for a number of weeks, is again in operation. In June, attachments aggregating $3,000 were placed on the property and a keeper put in charge. Just what disposition was made of the claims against the factory is not known. Present indications are that all the machinery will gradually be started and plant run in full.

SILK.

New Mills.

*Connecticut, Mystic. The Ninigret Mills Co., the new concern which will equip a silk plant at this place, has purchased the building in which they will install machinery. Early plans were for the new company to lease manufacturing space.

New Jersey, Little Falls. The plant of the Favorita Silk Co. has been purchased by Hall, Claus & Terhune Co. and will begin operations shortly with about 75 operatives. A printing department will be established. In August it was reported that Olaf J. Hall, treas. and supt. of the Cascade Carpet Co., had purchased the plant. The present report refers to the development of his plans. Arthur E. Claus and Frank C. Terhune, who are the partners of Mr. Hall, live in Brooklyn.

Enlargements and Improvements.

Connecticut, South Manchester. The Spring Silk Co. is to move to Paterson, N. J. The work of dismantling the mill and preparing the machinery for shipment has already begun. About a year ago Max Schlesinger of New York and Paterson, N. J., took over the property, which up to that time had been operated by the Matchett Bros., and it has since been run continuously under his direction. Mr. Schlesinger is interested in the Manhattan Silk Co. of Paterson, and has decided that operating expenses will be cut by combining the two plants. Mr. Matchett, who has been acting as manager in South Manchester, will go to Paterson to take charge when the machinery is again in operation.

Pennsylvania, Philadelphia. The Quaker City Ribbon Mills, Edgemont and Orthodox Sts., Bridesburg, which was burned out about a year ago, is to be rebuilt. The Killian Manufacturing Co., owners of the mill, who are now located at Orthodox and Pierce Sts., have placed the contract for the erection of the new building, which will be two stories and basement, of brick and concrete, 51 by 88 ft.; and a one-story boiler house, 20 by 35 ft. They are manufacturers of silk ribbons, operating 25 looms, which they sell through New York. The new plant will be up-to-date in every particular and run by electricity. The company has a capital of $50,000. Edward J. Killian, pres. and supt.; William B. Killian, treas., and James B. Killian, sec.

Pennsylvania, Scranton. The addition to the Ashley Silk Co., which we have reported from time to time, will be completed November 1. 6,000 spindles will be run on thrown silk, making a specialty of creppe twist and giving employment to 125 additional hands. This branch will be run in connection with the old mill.

MISCELLANEOUS.

*Connecticut, New Haven. All departments of the Narrow Fabric Corporation, Archer J. Smith, pres. and treas., will be enlarged when the new addition on which contract has just been awarded, is completed. The addition is a 3-story brick building, 200 by 68 ft., and it is expected that additional equipment will have been set up and be in operation some time in December. At present, elastic webs only are manufactured.

*Kentucky, Covington. The new department of The Overman & Schrader Cordage Co., manufactures all hard fiber cordage, making everything in the line of manila and sisal from the smallest cordage to the largest cable or hawser. This department is in full operation, giving employment to additional capital of $200,000 and about 150 men. This company has been a large manufacturer of a full line of soft fiber cordage of hemp, flax and jute for many years. The present capital stock of the company, which is an Ohio corporation, is $450,000, and it has a surplus of $150,000.

Massachusetts, Brockton. Arthur W. Smith, president of the Brockton Webbing Co., has purchased property on Hayward Ave., near Copeland St., and it is reported will erect a new webbing factory, one story high, 50 by 56 feet. Shoe strapping and facings are manufactured at the Brockton Webbing Co. on 70 narrow looms. Horace A. Keith is associated with Mr. Smith in its operation.

*Massachusetts, Fitchburg. The new weave shed for the Houghton Web Co. will not be built before the spring of 1909. The number of looms to be added has not been decided upon at this stage.

*Massachusetts, Wales. The new Textile Specialty Co., reported as taking over the plant of the old Berkeley Woolen Mill of which Herbert E. Shaw was proprietor, will spin, weave, dye and finish fabrics preparatory to cutting up for motorists' gloves and patent antiseptic cloths. Various fabrics will be manufactured on the machinery now in the mill and machinery to be added is whatever may be found necessary for cutting up, etc. A number of sewing machines and possibly some knitting machinery will be needed. When this plant was closed down some months ago, stock was not run out and the mill will be in operation next week running out stock which was in process at that time and making necessary preparations for the new products which are contemplated and which will be produced as soon as possible to arrange for economical manufacturing. As previously reported, Herbert E. Shaw will be the manager of the plant.

Massachusetts, Waltham. Construction work is progressing on the new storehouse being erected for the Waltham Bleachery & Dye House. The building will be available for use in about one month.

*New Jersey, Boonton. The mill to be occupied by Davis & Catterall is already erected. They expect to begin installing machinery about October 1 and will begin printing operations before the first of January. The output of the plant will be flag cloth, bunting and decoration prints. They are interested in complete machinery equipment.

*New York, Minetto. The concrete foundation for the new plant of the Columbia Shade Cloth Co. is practically completed. The new building will be 4 stories high, 360 by 200 ft. It was reported in June that this company had purchased the plant of the Minetto Shade Cloth Co. and that the plant of the Meriden Curtain Fixture Co. of Meriden, Conn., would be removed to this place.

New Jersey, Paterson. The A. H. Hart Co. of New York will remove its machinery to the Granite Mill on Grand St. This company manufactures linen twines, threads and yarns.

*New Jersey, Paterson. It is reported that construction work will soon begin on plant for the Wagaraw Bleachery reported incorporated in August with capital stock of $150,000. As stated previously, this company expects to start operations January 1. J. T. Thomann, R. C. Logan and G Van Cleve are the gentlemen interested. Mr. Van Cleve is a resident of this place.

New York, College Point. Two lots of land have been purchased by the College Point Silk Dyeing Co. for the improvement of their water supply. An addition of one story is being built to the main plant. They report a very brisk business.

North Carolina, Concord. It is reported that the Kerr Bleaching & Finishing Works will arrange for the immediate rebuilding of its plant, recently burned. Early reports to this effect were denied by the company, but there are indications that work will start on repairs within a few weeks.

*Ohio, Ashtabula. The Standard Cellulose Silk Co. reported incorporated in Maine with capital stock of $1,000,000, has started the erection of a plant at this place. Present plans of the company call for the completion of buildings in time for machinery to be installed and manufacturing begin by the first of April, 1909. Artificial silk threads will be made from cellulose, obtained from cotton. The office of this company is at 633 Williamson Building, Cleveland, O. Carlos B. Myers is president, P. G. Fiandar is secretary and treasurer. The president and treasurer, with C. W. Pattison, F. C. McMillan and G. G. Smith are the directors.

Ohio, Cincinnati. The Reliable Glove Co. has been formed by F. H. Karpe and A. Loesche and is manufacturing goods for knit wrist material. They buy yarns.

*Pennsylvania, Chester. Damage to the plant of T. I. Birkin & Co., manufacturers of Nottingham lace curtains and curtain net, caused by the recent explosion, has been repaired and the mill resumed operations September 11.

Pennsylvania, Norristown. The Wilcomb Mch. Co. are pushing forward to completion as fast as possible their new factory. They are looking forward to having it completed and the machinery installed and in operation on or about the middle of November. They seem to be greatly encouraged about the business outlook owing to the fact that

they have received not only inquiries but substantial orders for their machines.

Pennsylvania, Philadelphia. Parties in Eddington, Bucks Co., Pa., a short distance from this city, in conjunction with other parties located here, have in prospect the starting of a plant for the manufacture of hair cloth on an extensive scale. The looms for the plant have been ordered and will be set up and put in operation as soon as a satisfactory location can be obtained.

Pennsylvania, Philadelphia. The Miller Waste Mfg. Co., whose plant was burned out some time ago, are now located at 1930-32 Westmoreland St. The new buildings have been fitted up with a gas engine, presses, pullers, etc., and they report a very active business.

Pennsylvania, Philadelphia. Messrs. Schweigart Bros. have recently started up a plant for the dyeing of cotton skein yarns at Tioga and Aramingo Sts., where they have had erected a new one-story brick dyehouse, 80 by 25 feet, which they have fitted out with new machinery with a capacity of 2,000 pounds per day. Albert Schweigart is the buyer.

Pennsylvania, Philadelphia. John Greany has taken over the plant of the bankrupt Tioga Dye Works, which was recently sold out at public auction, located on Schiller St., below Richmond St. Mr. Greany has refitted the buildings for the dyeing of cotton, woolen and jute yarns, operating under the name of the Ideal Dye Works. The plant has capacity of 6,000 pounds per day.

Pennsylvania, Philadelphia. John Bray is arranging for the equipment of a plant on Penn St., over the Burton Dyeing Co., in Germantown, for extracting, printing and finishing hosiery. The plant will contain new machinery throughout and will have a capacity of 1,000 dozen per day. The printing department, in which work will be done under new methods, will be ready within a week's time, and the finishing department will be put in operation as soon as the necessary machinery can be installed. Mr. Bray is also connected with the firm of Bray & Armstrong, 2111 E. Westmoreland St., printers of hosiery labels, with which he will continue to be identified as heretofore.

*Rhode Island, Shannock. The equipment for the new 144 by 54 ft., one story, addition to the plant of the Columbia Narrow Fabric Co. will be six elastic web looms. The building is to be completed by November 1 and the looms will be set up as soon as possible after that date, as it is hoped to have them producing goods by the middle of November. George H. Clark is pres. of the Columbia Narrow Fabric Co/ and George P. Clark is treas., supt. and buyer. The product is sold direct.

Wisconsin, Waupun. The C. W. Noble Co., contractors, are erecting a building at the State Prison for the manufacture of binder twine. Construction work will be completed some time in the winter and the production of twine will start early in 1909. The state will have full charge when in operation. Contract for electric equipment has been awarded to the Northern Electric Mfg. Co. of Madison.

FAILURES AND SUSPENSIONS.

Pennsylvania, Hamburg. Creditors have filed a petition to have W. W. Scott Fischer, trading as the Hamburg Bleach & Knitting Mills, adjudged an involuntary bankrupt. The creditors and amounts claimed are: Chas. J. Webb & Co., Inc., $4,679.32; George W. Chapin, $1,109.16; and Henry W. Stoyer, $545. William Fassnacht of Chas. J. Webb & Co. has been appointed receiver with security fixed at $2,500. Mr. Fischer, in addition to operating a bleachery, doing work for the trade, also operated 16 knitters and 24 sewing machines on jersey ribbed cotton underwear which he sold direct and through agents.

Pennsylvania, Philadelphia. Creditors have filed a petition to have William Davies adjudged an involuntary bankrupt. The creditors and the amounts claimed by them are Schell, Taylor & Longstreth, $2,257.28; Thomas Davies, $5,935.46, and James C. Haigh, $1,658.53. He manufactured upholstery goods and was located at Orthodox and Large Sts.

South Carolina, Edgefield. T. I. Hickman, Augusta, Ga., and A. S. Tompkins of this place have been appointed receivers for the Edgefield Mfg. Co. The company operates a ginnery, oil mill and cotton mill of 5,000 ring spindles and 320 broad looms, on sheetings and shirtings.

FIRES.

Georgia, Elberton. Warehouse No. 1 of the Swifts Cotton Mill was burned with contents consisting of finished goods, causing a loss of $75,000.

Illinois, Chicago. Fire destroyed the wool house and fertilizer plant of Armour & Co. in the Union Stock Yards. The buildings were 5 stories high, of brick construction and extended an entire block. The loss is in the neighborhood of $500,000. The Boynton Wool Scouring Co. has been awarded contract for handling the damaged wool and reports that the stock is damaged by both fire and water and is the largest amount of wool ever damaged in the West. They will be obliged to run their plant night and day for several weeks in handling this wool.

New York, Troy. Five women were hurt in a panic during a fire which recently damaged the plant of the United Waste Company to the extent of $50,000. The company, in addition to the plant located in this city, which was burned out, operates a plant at Cohoes. They are manufacturers of cotton, wool and merino shoddies and wastes, operating 4 pickers, 12 garnetts, and 2 dusters. The main office and factory is at Troy.

Pennsylvania, South Bethlehem. The storage warehouse of the Twentieth Century Co., owned by Adam Brinker, has been destroyed by fire of unknown origin, entailing a loss of $100,000. Among the heavy losers is the Halcyon Knitting Mills Co., which had goods valued at $24,000 stored in the building. The loss is covered by insurance.

FACTS AND GOSSIP.

Alabama, Huntsville. The textile industry has shown marked improvement during the last few weeks. The situation with local mills is said to look more promising and it is predicted that all the mills in this city and section will be run on full time by November 1.

Alabama, Tuscaloosa. The Sanders Cotton Mills have been incorporated with capital stock of $40,000. J. W. Sanders, John D. Caple and W. R. Sanders are the incorporators. It is understood that this corporation takes over the property and business of the Sanders Cotton Mill of this place, manufacturers of duck on 4,000 ring spindles and 108 looms.

*Arkansas, Conway. Reports regarding the proposition to establish a woolen mill at this place by James McMahon are misleading. As reported in the Advance News in August, Mr. McMahon contemplates removing the Arkansas Woolen Mill, Inc., of Nashville, recently purchased by him, to some other city. A new company is not being organized and no definite arrangements have been made for removing the plant from Nashville.

Connecticut, Killingly. A new company to be known as the Nashawaug Electric Power Co. is to establish a power plant near Ballouville in the northeastern part of Killingly. The Attawaugan Company, manufacturers of cotton goods, is negotiating a contract to take electric power from the new power company for 25 years. The Nashawaug Co. has authorized issuing of $37,500 of 6 per cent. cumulative preferred stock and $112,500 of common stock. It has also authorized issue of $100,000 5 per cent. bonds. Grosvenor Ely of Norwich is president of the corporation, Frank B. Perry of the General Electric Co., Boston, is secretary, and Frederick Taber of New Bedford is a member of the Board of Directors.

*Connecticut, Killingly. Nothing further has been given out relating to the proposed yarn plant which it was rumored would be started in this vicinity. The parties interested looked over the Thayer Woolen Co.'s property which has not been in use for some time. This plant has an equipment of 4 sets and 56 looms.

*Connecticut, Middletown. At a special session of the Superior Court, Judge Gager passed an order discharging as receivers of the property of the York Silk Mfg. Co., in this state William H. Lanius and Matthew Collins. York Silk Mfg. Co. has one plant at this place, formerly the Merchants' Silk Co. It has been shut down for several months, but will now resume operations as early as possible. The company has a resumption plan as follows: Creditors to the amount of less than one thousand dollars will be paid in cash; claims over that amount will be paid part in cash and part in bonds and stock of the company.

Connecticut, Middletown. The working hours have been increased from 50 to 55 at the Russell Mfg. Co.'s plant. Elastic and non-elastic webbing of all kinds is manufactured on 100 broad and 400 narrow looms. 8s to 80s yarn is bought.

Connecticut, Stafford Springs. The plants of Frederick Faulkner and Cyril Johnson have gone on the winter schedule. The hours of work are from 6.30 a. m. to 5.30 p. m., with 3/4 of an hour for dinner. Work will be stopped on Saturday afternoons at 4 o'clock.

Connecticut, Vernon. The property of the Ravine Mills Co., formerly manufacturers of warp yarns and twines, has been acquired by the First National Bank of Hartford for $14,500. The bank held a mortgage for $13,000 on the property. Particulars of the financial embarrassment of the Ravine Mills Co. have been given.

Florida, Pensacola. The Commercial Club has appointed a committee to confer with Columbus, Ga., parties who are behind the movement to locate a $500,000 cotton mill at this point. Oscar Davis of Columbus represents the promotors.

Georgia, Augusta. Contract to reconstruct the dam which was swept away by the recent floods, has been awarded to the W. J. Oliver Construction Co. of Knoxville, Tenn. Preparations are being made to start work on construction at once. It is estimated that the cost will be from $500,000 to $1,000,000.

Georgia, Dalton. At the first annual meeting of the Elk Cotton Mills, the same officers and board of directors that have served for the past year were elected. The report of M. C. Foster, general manager, showed that the first year had been a prosperous one, in spite of the general business depression.

*Georgia, Lindale. We are advised that there is no truth in the report that the Massachusetts Mills in Georgia contemplate erecting an addition this fall.

Georgia, Newnan. At a meeting of the stockholders of the McIntosh Mills it was decided to issue preferred stock to the amount of $100,000. This will be applied to liquidate all outstanding obligations and give a working capital of about $40,000.

Georgia, Waycross. The Board of Trade is interested in the promotion of a cotton mill company. No information regarding the line of goods to be manufactured has been given out.

*Illinois, Ipava. The Ipava Woolen Mills, formerly owned by C. F. Foote, who was declared bankrupt in June, have been sold by trustee B. H. Taylor for $4,175. Rushville parties were the purchasers. It is not known whether the mill will be opened or not. The plant contains 2 sets and 9 broad looms on which blankets and homespuns were manufactured.

*Maine, Sanford. The capital stock of the Goodall Worsted Co., comprising the Goodall Worsted Company and the Maine Alpaca Co., is $1,000,000, $150,000 being preferred stock, drawing 6 per cent. interest, and the balance $850,000, common stock.

Maine, Skowhegan. The association of firms and individuals who own the water power and are known as the Skowhegan Water Power Co. are making plans for extensive repairs to the canal.

This will not effect the running of the Anderson Mills (American Woolen Co.) as the plant has been equipped to run by steam.

Maine, Waterville. There will be no change in the operation of the Terry Mfg. Co. following the purchasing of a large interest by W. A. Guile, Jr., and his election to the presidency of the company. Mr. G. F. Terry is treas., S. N. Annis is agent, and J. W. Gormley is supt. 4 sets of cards and 76 looms are operated. The Earnscliffe Worsted Mills with which Mr. Guile is connected are the selling agents.

*Maryland, Elkton. Suits have been filed by Deibert & Wilson against 22 fire insurance companies for the payment of insurance due them for the loss of their mills, which were burned early in May. Deibert & Wilson manufactured damask and plaid table cloths on forty looms. Their loss by fire was estimated at about $50,000.

Massachusetts, Adams. The textile situation is much improved. The Renfrew Mfg. Co. has returned to a full schedule. The Berkshire Cotton Co. has been working full time for some weeks and the Adams Woolen Co. will shortly put into effect a system of night and day operation.

*Massachusetts, Blackington. A. J. Buffum has taken charge of the Blackington Mfg. plant and will fill the company's orders in addition to manufacturing goods for Waterhouse & Howard. This arrangement is only temporary, allowing the Blackington Company to go on with its voluntary liquidation, and making it possible to perfect plans for the disposal of its mill property, without shutting down the mill. Herman Waterhouse is the probable purchaser of the Blackington property.

*Massachusetts, Boston. The plants of the Roxbury Carpet Co. and of the Saxonville Mills of Saxonville have returned to the full schedule of working hours, but only about 60 per cent. of the full capacity is being turned out. Edgar N. Hunt, treasurer of these companies advises that reports to the effect that a branch plant will be started at Gloucester are wholly incorrect and the matter has never been considered.

*Massachusetts, Clinton. Charles B. Smith has been elected trustee in connection with the proceedings in bankruptcy against the Pickford Worsted Co. The meeting of creditors was adjourned until November 5. The Pickford Worsted Co. was petitioned into bankruptcy in April and since that time reports have gone out that the Board of Trade had appointed a committee to reorganize the company and keep the industry at this place.

Massachusetts, Clinton. At a meeting of the stockholders of the Earnsdale Worsted Mills it was decided to increase the capital stock of the corporation from $35,000 to $65,000 by issuing 300 shares, par value $100. Samuel Shuman of Boston offered to purchase the entire 300 shares and this offer was accepted. Fancy worsteds and woolens are manufactured on 32 looms. Mr. Shuman is president of the corporation.

*Massachusetts, Fall River. The Seaconnet Mills have indefinitely postponed the erection of the proposed addition to their plant. Some of the directors and other stockholders declared that the enlargement of the plant on borrowed money would affect the concern's credit and cause a material loss in the market value of Seaconnet Mills stock. The plans call for an addition to hold approximately 10,000 ring spindles and preparatory machinery.

Massachusetts, Hinsdale. James H. Hinsdale, treasurer of the Hinsdale Woolen Co., on behalf of the corporation, has petitioned the Court for the dissolution of the corporation. The petition states that the company has capital stock of $83,000 and that at a meeting held at Pittsfield, January 28, it was voted to authorize the treasurer to petition for dissolution. The Hinsdale Woolen Company formerly operated the blanket mill at this place, since taken over by the Hinsdale Woolen Mills in which Thomas Kelley & Co. of Boston are interested.

Massachusetts, Mansfield. The machinery equipment of the Mansfield Braiding Co. has been sold to Frank W. Whitcher & Co., Inc., dealers in boot and shoe findings with an office at 14 Albany St., Boston. The machinery, consisting of 200 braiders, has been removed to East Taunton, but it is not set up at present. The new owners state that space has been leased suitable for manufacturing and eventually the machinery will be put in operation, but just how soon cannot be stated now. The Mansfield Braiding Co. manufactured flat and tubular braid, buying all yarns.

*Massachusetts, Medford. The Shawmut Finishing Co., incorporated in Maine, with capital stock of $350,000 several days ago, is connected with the Shawmut Finishing Co., which we reported in April as being incorporated with capital stock of $25,000 and occupying the plant of the bankrupt Crown Dyeing Co. They state that plans are not complete and no information will be given out at the present. Raymer B. Weeden of Providence is treasurer of the original Shawmut Finishing Co. and associated with him were James D. Lloyd as pres. and supt. and Chas. A. Hull of New York. These men are understood to be interested in the new company.

Massachusetts, Methuen. The Methuen Company's plant is running full time again, and it is hoped by the management to keep the mill on full time and with a full force during the fall and winter.

*Massachusetts, New Bedford. The addition previously reported to be built for the New England Cotton Yarn Co. at the foot of North St. is merely a short wooden bridge connecting two of the company's mills.

Massachusetts, North Adams. Business continues to improve at the Windsor Print Works. The concern is gradually putting on more employes. All departments are running at least full time and many of the rooms are being operated overtime.

Massachusetts, North Dighton. It is expected that enough cloth will arrive at the Chadwick Print Works within a few days to keep the mill running full time indefinitely. The plant has been shut down for a few days as there has been no material to work on.

Personals.

Mr. Otto Walther, who has been seriously ill for some time, has almost fully recovered and sailed for Germany on the 1st instant, the trip being for both business and pleasure. In spite of the present dullness in business Mr. Walther reports the sale of a large number of the full fashioned machines built by Schubert & Salzer, many of which are now being installed.

Harry W. Crowe has accepted the position as superintendent for the Pennsylvania Knitting Mills Company, Spring Forge, Pa.

In recent issue it is stated that Albert Hitchcock has succeeded W. H. Shepherd as superintendent of the Chattanooga Knitting Mills. We learn that while Mr. Hitchcock has recently been made superintendent of these mills, Mr. Shepherd continues as general superintendent of this mill and the two other mills belonging to the Richmond Hosiery Mills.

Sidney H. Little, who has been superintendent of the R. I. Worsted Company, Stafford Springs, Conn., the past two and one-half years, has resigned.

W. P. Campbell has resigned his position as overseer of carding at the Bibb Mills, Porterdale, Ga., and secured a similar position with the American Spinning Company, Greenville, S. C.

Harry Haigh has accepted a position as overseer of dyeing at the Campbell Mfg. Company, Sangerville, Me.

Arthur H. Judge, overseer of carding at the Manchaug Company, Manchaug, Mass., has resigned and is succeeded by William Pengalley. He was formerly overseer of finishing at the Fisher Mfg. Company, Fisherville, Mass.

L. B. Foster, for some time superintendent at Scottdale, Ga., and more recently with the new duck mill at Kansas City, Mo., is now superintendent of the Columbia Duck Mill, Columbia, S. C.

J. D. Griffiths, formerly superintendent of the Blackinton Mfg. Company, Blackinton, Mass., has accepted the position as designer for James & E. H. Wilson, Pittsfield, Mass.

John G. Oswald has accepted the position as superintendent of the branch mill of the Champlain Silk Mills at Brooklyn, N. Y.

Christopher P. Brooks of New Bedford, Mass., left that city Friday, Sept. 18, for Colorado and California. He sails later from San Francisco for Japan and China to spend about a month in each country and thence goes to Singapore, Burmah, Ceylon and India to stay several weeks, and by the way of the Suez Canal to Egypt and Europe, completing the tour round the world by returning to New Bedford, Mass., next summer. Mr. Brooks' tour is mainly for pleasure, but he will investigate the methods of distribution and manufacture of textiles in many of the places visited.

John Gormley, superintendent of the Blanding Mills, Providence, R. I., has severed his connection with that company and accepted a similar position with the Ferry Mfg. Company, Waterville, Me.

Richard Thomas, well known in the Arlington district, has resigned his position in the Washington Mills, Lawrence, Mass., to accept a position as overseer in the Prospect Mill, South Lawrence.

James Magner, overseer of dyeing at the Madison Woolen Mills, Madison, Me., for the past eleven years, has severed his connection with that company to accept a similar position with the Assabet Mills, Maynard, Mass.

Walter C. Hadley, overseer in the designing department of the American Print Works, Fall River, Mass., has been transferred to the New York office of the company. He will remain in their employ and will spend some of his time in Fall River.

John Cole has accepted a position as overseer of weaving at the Tilton Mills, Tilton, N. H. He comes from Keene, N. H.

John A. Fitzgerald, formerly employed at the Dwight Mfg. Company, Chicopee, Mass., has accepted a position at the Indian Orchard Company, Indian Orchard, Mass.

Thomas Kershaw, until recently boss dyer at the Edgemere Mfg. Company, Great Barrington, Mass., has started a dyeing plant known as the Housatonic Dye Works.

George Rogers, designer at the Saranac Mills, Blackstone, Mass., has severed his connection with that company.

Wm. Tallant has accepted the position as overseer of weaving at the Davis Mill, Fall River, Mass., succeeding Harry Jerry.

Thos. Claffey has accepted a position as overseer of the spinning department with the night force at the Pontoosuc Woolen Mfg. Company, Pittsfield, Mass.

Albert E. Brooks is now overseer of the cloth department of the Troy Mills, Fall River, Mass., succeeding his father who recently died.

Edward Davenport, Jr., has accepted a position as overseer of dyeing at the Wayne Knitting Company, Fort Wayne, Ind. He comes from Cleveland, O.

John W. Campbell, designer for the Cleveland Worsted Mills, Cleveland, Ohio, has been appointed designer and styler for M. H. Meinhard & Company, New York City.

Benjamin Hallowell has been appointed superintendent of the worsted yarn department of the Lymansville Mills, Lymansville, R. I. He was formerly employed in charge of the office work.

Patrick Ryan, formerly overseer of carding at the Somerset Woolen Company, Monson, Mass., has resigned. The position has been filled by David McArthur of Pittsfield, Mass.

John Smith has accepted a position in the wool sorting department of the Gilbert Mfg. Company, Gilbertville, Mass. He was formerly employed at the Washington Mills, Lawrence, Mass.

E. A. Mongeon, formerly superintendent of the Lonsdale Company, Lonsdale, R. I., was married in Providence recently to Miss Ellarette B. Fish of Tremont St., Lawrence, Mass.

Frank E. Brazeal, formerly overseer of finishing at the Rhode Island Worsted Company, Stafford Springs, Conn., is now in charge of finishing at the Litchfield Worsted Company, Clinton, Mass.

Perly H. Gower has accepted the position as second hand in the dressing department of the Aetna Mills, Watertown, Mass., under overseer Geo. A. Copeland. Mr. Copeland is now in charge of the weaving and dressing.

J. B. Shaw, overseer of dyeing at the Assabet Mills, Maynard, Mass., has severed his connection with that company after a number of years of service.

G. F. Slipp has severed his connection with the Pemberton Mills, Lawrence, Mass., to accept a position as overseer of dressing at the Massachusetts Cotton Mills, Lowell, Mass.

Joseph Costello has severed his connection with James & E. H. Wilson, Pittsfield, Mass., as overseer of finishing to accept a similar position with the Broad Brook Company, Broad Brook, Conn.

Henry W. Templeton, overseer of finishing at the Broad Brook Company, Broad Brook, Conn., for the past three years, has severed his connection with that company.

Herbert R. Thompson of the Elmdale District, Uxbridge, Mass., employed as a carpenter in the North Uxbridge Cotton Mills, had the first two fingers on his left hand severed while operating a planing machine.

James Casey has accepted the position as overseer of carding at the Pontoosuc Mills, Pittsfield, Mass., on the night shift.

Francis McDade, overseer of bleaching at the Otis Company, Ware, Mass., has severed his connection with that company to accept a position as overseer of bleaching at the Home Bleach & Dye Works Pawtucket, R. I. Mr. McDade was with the Worcester Bleach & Dye Works previous to accepting the position with the Otis Company and is considered a first class man on yarns and threads.

H G. Tietze has accepted a position as overseer of spinning at the Ravine Woolen Mills, Racine, Wis. He comes from Hanover, Ill.

Paul E. Wise, the new agent of the Bigelow Carpet Company, Clinton, Mass., took up his new duties September 10. Mr. Wise has been with the company at their Lowell plant for the past month.

Mark W. Bostwick has been apponited manager of the local office in New York City of the Lewis Knitting Company, succeeding the late T. P. Hooker.

Edward Crane, son of Representative S. V. Crane, will enter the Blackstone Mfg. Company, Blackstone, Mass., for the next year to acquire a knowledge of the manufacturing in the different departments.

Geo. P. Wilman overseer of dyeing at the Blackinton Mfg. Company, Blackinton, Mass., has severed his connection with that company. His successor is Richard Fleming, who has been assistant overseer for a number of years.

George Cunliffe, overseer of weaving in departments 3, 4, 5 and 6 of the Dwight Mfg. Company, Chicopee, Mass., has severed his connection with that company after 1 1/2 years of service.

Frederick Southwick, Jr., has accepted a position as pattern weaver at the Beebe Webber Company, Holyoke, Mass. He was formerly employed at the Hartford Woolen Company, Hartford, Vt.

Edward T. Prendergast, overseer of carding at the Elmdale Mills, Uxbridge, Mass., has severed his connection with that company. Mr. Prendergast was treasurer of the Hecla Base Ball Club of that town.

Richard O'Donnell has accepted the position as overseer of dyeing at the S. N. & C. Russell Mfg. Company, Pittsfield, Mass. He was formerly employed at the Morrison Woolen Company, Dexter, Me.

T. B. Moore has accepted the position as overseer of carding and spinning at the Paterson Mill, Kannapolis, N. C.

H. L. Jay has accepted a position as overseer of weaving at the Exposition Cotton Mills, Atlanta, Ga. He formerly represented the Stafford Company of Readville, Mass.

W L. Morrison has accepted the position as overseer of spinning at the Eagle & Phoenix Mills, Columbus, Ga.

J. M. Cannon has been appointed superintendent of the new mill at Simpsonville, S. C. He was formerly employed at the Monaghan Mills, Greenville, S. C.

G. F. Andrews has accepted the position as overseer of carding in the new duck mill at Kansas City, Kans.

W. J. Allen has re-entered the employ of the Elizabeth Cotton Mills, Egan, Ga., as superintendent.

J. V. Thompson, overseer of weaving at the Glen-Lowry Mills, Whitmire, S. C., has resigned his position.

J. D. McIntosh, from the Crompton & Knowles Loom Works, Worcester, Mass., has accepted the position as overseer of weaving in the new mill at Spencer Mountain, Lowell, N. C.

A. MacMurray has severed his connection with the Dwight Mfg. Company, Chicopee, Mass., as overseer of spinning departments 1, 2, 3, 4 and 5. Mr McMurray was presented with a purse of

gold, a silver match box and a cigar holder by the help employed in the spinning department. He has accepted a similar position with the Esmond Mills, Enfield, R. I.

Oliver D. Drew, superintendent of the Dwight Mfg. Company, Chicopee, Mass., will sever his connection with the above firm October 1st.

Benjamin Ransehausen has accepted a position as overseer of finishing at the River Spinning Company, Woonsocket, R. I.

Kirk Verity has accepted the position as designer at The Central Worsted Company, Central Village, Conn.

Edward Deverall, overseer of weaving at the Union Mill, Pascoag, R. I., the past twenty-five years, has severed his connection with that company. On Saturday evening, September 12, a committee representing the loom fixers and weavers called upon Mr. and Mrs. Deverall at their home on Broad St. and presented Mr. Deverall with a pipe and chair. Mrs. Deverall was also presented with an easy chair. Mr. and Mrs. Deverall were greatly surprised, but on recovering their feelings responded and thanked the donors for the gifts. During the evening there was a program of singing and collation also served.

Howard W. Amesley, superintendent of the Saranac Mills, Blackstone, Mass., and Miss Abbie Kimball, overseer of the sewing department at the same plant, were married at Portland, Me., where the bride's relatives reside. The happy couple returned to town after an extended honeymoon through Dover N. H., and Portland, Me.

On Saturday, August 29, 1908, the overseers and second hands of the Parker Mills, No. 2, Warren, R. I., held a clam bake and field day on the banks of the Kickemint River. After sharpening their appetites with all sorts of field day sports, they betook themselves to the nearby grove and did ample justice to the bake well prepared by Capt. Macomber. After dinner short speeches were made by John W. Simister, the oldest overseer of the mill, and by E. E. Bartlett, superintendent. Everyone had an enjoyable outing and it is hoped that the excursion may be annual. The following named attended; E. E. Bartlett, superintendent; J. W. Simister, overseer of weaving; Narcisse Guillot, overseer of spinning; James Tierney, overseer of carding; Chas. Hanover, overseer of mules; James Craig, overseer of the cloth room; Isaac Garceau, master mechanic; James Ashton, engineer; Frank Littlefield, second hand of weaving; Gilbert Dubois, second hand of spinning; Chas. Coristine, Thos. Bertenshaw, Max Union, second hands of carding; John Duffy, second hand of mules, and Edward Hinchey, clerk.

David J. Price has accepted a position as overseer of weaving at the Merchant's Mill ,No. 3, New Bedford, Mass.

Hiram Haynes, overseer of dyeing at Cushman's Mill, Monson, Mass., has resigned and accepted a similar position at Worcester.

R. L. Walker has accepted the position as superintendent of the Edgefield Mfg. Company, Edgefield, S. C.

J. T. Lockey, one of the overseers at the Ninety-Six Cotton Mills, Ninety-Six, S. C., was married recently to Miss J. O. Tolison of Belton, S. C.

Samuel Watson, formerly superintendent of the old Flint Mill, Fall River, Mass., has donated a set of chime bells to the city of Fall River.

James Knox has accepted a position as overseer of dyeing at the Hope Worsted Mills, Oakland, R. I. He was formerly employed at Glendale, R. I.

Joseph Fletcher has been mentioned as candidate for governor of Rhode Island. Mr. Fletcher is a woolen and worsted manufacturer, having mills at Mapleville and Allenton, R. I., and Central Village, Conn. It is not definitely known whether Mr. Fletcher will accept the nomination.

Hugh Canavan, superintendent of the Uncasville Mfg. Company, Versailles, Conn., was pleasantly surprised Friday evening, September 4, by a number of his friends, who presented him with a handsome signet ring, a gold scarf pin and a fountain pen, presentation being made by Conrad Sheffer, the occasion being Mr. Canavan's birthday. The evening was spent in card playing and dancing. An elaborate supper was served.

M. H. McEvoy has accepted a position as overseer of dyeing at the Excelsior Mills, Farnumsville, Mass. He comes from the Bay State Worsted Company of Worcester, Mass.

Thos. F. Crofwell has accepted the position as overseer of dyeing at the Bay State Worsted Company, Worcester, Mass. He was formerly employed at the Strathmore Worsted Mills, Concord Junction, Mass.

Harry Daw has accepted the position as designer at the Excelsior Mills, Farnumsville, Mass. He comes from Providence, R. I.

Edward Gill, for more than 20 years employed as engineer at the Atlantic Mills, Providence, R. I., has severed his connection with that company. He has been in charge of a large turbine engine since it was installed and was considered a capable man.

Paul Fandre, an overseer at the Winthrop Mills, Taunton, Mass., has severed his connection with that company and accepted a similar position at Fall River, Mass.

Secretary Samuel Ross of the International Mule Spinners' Association, was presented with a silver service at the annual meeting of the Association ending Saturday, September 12, at Boston, with the election of officers. The board of officers moved to bring back boys into active membership in the Association.

Windell J. Battye, designer for the Coronet Worsted Company, Mapleville, R. I., has removed his household effects to Woonsocket where he will take up his permanent home. He still retains his position as designer at the Coronet Mill.

Fred W. Allen, overseer of weaving at the Glen Worsted Mill, Harrisville, R. I., has severed his connection with that company to accept a similar position with A. L. Sayles & Son, Union Mill, Pascoag, R. I. He was presented with a diamond ring

by the help employed in the weaving department of the Glen Mill on his retirement.

John Sullivan, who has held the position as general superintendent for C. E. Riley & Company in the management of a number of their mills in the South, has taken a position as agent of the Taber Mill, New Bedord, Mass.

Peter Flynn has accepted the position as superintendent of the Ninigret Mills at Mystic, Conn. He was formerly employed at the Leader Weaving Company at Central Falls, R. I.

General E. S. Boss, agent of the local plant of the American Thread Company, Willimantic, Conn., is observing his golden anniversary of service at the thread mill, having completed fifty years of work. He began as a dress tender at the age of 16 and by hard work and strict attention to business he worked his way to the position which he now holds.

The twelfth annual convention of the Eastern Maine Woolen Overseers' Association was held at Waterville, Me., Saturday, September 12, about 50 members being present The report of the treasurer showed a balance of $547.09. The following officers were elected: F. W. Seavy, Vassalboro, president; Gideon Maklut, Newport, and Ibel Hall, Waterville, vice presidents; J. T. Davidson, Waterville, treasurer, and L. C. Sawyer, Dover, secretary. The next meeting will be held in Newport, Me.

Howard W. Armbruster, connected with the Sauquoit Silk Company, Philadelphia, Pa., disappeared from that city on Saturday, September 5. He had been in ill health for some time and his friends expect to locate him in some hospital where he has gone for treatment.

Peter Costello, Jr. has accepted the position as overseer of finishing at the Granite State Mills, Fairbanks & Dorr, props., Guild, N. H. He comes from Lowell, Mass.

J. G. Oswald is superintendent of the branch mill of the Champlain Silk Mills, at Brooklyn, N. Y.; John Deardon is overseer of twisting and gassing; Fred Callingham, machinist and A. Moore, bookkeeper. The principal works of this company are at Whitehall, N. Y.

L. L. Chandler has accepted the position as overseer of spinning at the Apalache Mills, Arlington, S. C. He was formerly employed at the Jonesville Mfg. Company, Jonesville, S. C.

D. J. Rhyne, overseer of spinning, spooling and warping at the Delgado Mills, Wilmington, N. C., has resigned and is now located at Gastonia, N. C.

J. H. Perkins has accepted a position as overseer of carding at the Winder Cotton Mill, Winder, Ga. He was formerly employed at the Walton Mills, Monroe, Ga.

N. F. Harris has accepted a position at the Gem Cotton Mills, Gibsonville, N. C. He was formerly employed at the Erwin Cotton Mills, West Durham, N. C.

A. Harwell has been appointed superintendent of the new Delburg Mills at Statesville, N. C.

Fred A. Cumnick, manager of the Perrin Cotton Mills, Celeste, Texas, has resigned to become general manager of the Humbolt Cotton Mills, Humbolt, Tenn.

Guy Edmondson has accepted the position as overseer of dyeing at the Knoxville Woolen Mills, Knoxville, Tenn., succeeding John E. Bradley.

Arthur Robinson has accepted the position as overseer of dyeing at the Monarch Woolen Company's plant, Montville, Conn.

R. T. Dawson, late assistant superintendent of the Buell Mfg. Company, St. Joseph, Mo., has accepted the position as designer and assistant superintendent at the Cocheco Woolen Mfg. Company, East Rochester, N. H.

W. F. Whittle, superintendent of the Union Bleaching & Finishing Company, Greenville, S. C., has severed his connection with that company.

John T. Bannon, who has been connected with the Sayles Bleachery at Saylesville, R. I., for the past seventeen years in charge of the bleaching and finishing, has accepted a position as superintendent of the Union Bleaching & Finishing Company, Greenville, S. C.

F. K. Treadway has accepted the position as overseer of carding at the Beatty Felt Company, Mishawaka, Ind. He was formerly employed at the Wallace & Smith Blanket Mills, La Porte, Ind.

Cyril T. Laviere, formerly second hand in the dyeing department of A. L. Sayles & Son, Pascoag, R. I., has been promoted to the position as overseer succeeding Geo. Hugh, who has resigned on account of ill health.

Wm. Smith, overseer of weaving at the New England Company, Rockville, Conn., has resigned and is succeeded by Wm. Heintz, formerly second hand. Sidney Little, formerly second hand at the Hockanum Company succeeds Mr. Heintz as second hand at the New England Company. Richard Groupner has been promoted to Mr. Little's position at the Hockanum Company.

John W. Doubleday, president, and L. M. Butman, secretary, of the Empire Worsted Mills, Clayville, N. Y., have made arrangements with the stockholders of the Greenwood Worsted Mills of Jamestown to take the absolute management of the plant for the next two years.

Clarence L. Gardner, who has recently accepted the position as overseer of carding at the Bernon Mills, Georgiaville, R. I., was presented with a purse of money by the employes at the Burgess Mills, Pawtucket, R. I.. where he resigned as second hand.

Michael J. McNally has accepted the position as bookkeeper at the Steven's Mill, Fall River, Mass.

Chas. H. Kohlrausch, for the past 43 years connected with the Talbot Dyewood Chemical Company's plant at North Billerica, Mass., and for the past 25 years president and manager, has retired from active management of the concern and is succeeded by his brother, John Kohlrausch.

H. B. Sweet has accepted the position as overseer of carding for the Danielson Cotton Company, Danielson, Conn. Geo. W. Jackson, formerly overseer at the Glasgo Yarn Mill, Glasgo, Conn., has succeeded Thos. H. Dugan as overseer of ring spinning.

Ernest Rhodes has accepted the position as designer at the Lebanon Mills, American Woolen Company, Lebanon, N. H. He was formerly employed by James & E. H. Wilson, Pittsfield, Mass.

Albert Baechtold, superintendent of the Chinnabee Cotton Mills at Talladega, Ala., has been appointed superintendent of the Highland City Cotton Mills also. These mills are running on full time now, with good full crews and fair prospects ahead.

C. E. Benson, for the past seven years assistant superintendent of the Berkshire Cotton Mfg. Company, Adams, Mass., has resigned and accepted a similar position with the Arlington Mills, Lawrence, Mass.

J. Nelson Sanderson, agent of the Renfrew Mfg. Company, Adams, Mass., has resigned his position and is to retire from active business. He was one of the oldest and best known mill officials in this section of the country.

E. A. Keigwin has been appointed overseer of the card room in the cotton department of the Arlington Mills, Lawrence, Mass., to succeed James Bedford, who comes from Pawtucket, R. I.

Fred Miller, overseer of weaving at the Urbana Woolen Mills, Urbana, O., has resigned to accept a similar position with the Columbiaville Woolen Mills, Columbiaville, Mich.

James Blackwood, overseer of the dressing department of the Earnscliffe Worsted Mills, Providence, R. I., has resigned to accept a similar posisition with the National & Providence Worsted Mills, American Woolen Company, same city.

C. Alden Beers has severed his connection with the Bristol Mfg. Company, Bristol, Conn., to accept an important position with the Columbia Hosiery Company, New Haven, Conn.

Edward A. Trowbridge of the Warren Soap Mfg. Company, Boston, has been elected member of the Republican State Committee, representing five Senatorial Districts, in which position he succeeds Hon. Louis A. Frothingham, candidate for Lieutenant Governor. Mr. Trowbridge has, for the past ten years, been a member of the Republican City Committee.

W. H. Robinson, superintendent of the Brighton Mills, Passaic, N. J., has severed his connection with that company. The position has been taken by T. J. Kelly, who has been promoted to the position.

Alfred Penkethman, overseer of burling and sewing for J. & J. Dobson, Bradford Mills, Germantown, Philadelphia, has resigned to accept a similar position with the Firth & Foster Dyeing & Finishing Works, Philadelphia, Pa.

Samuel S. White, overseer of carding and spinning in the flax department of the Stevens Mfg. Company, Fall River, Mass., has resigned to accept a position as superintendent of the Chelsea Jute Works, New York City.

John S. Hetherington, for several years second hand of the weaving at the Assabet Mills, Maynard, Mass., has resigned and accepted a position as overseer of weaving for the Beebe Webber Company, Holyoke, Mass.

Wm. McGill, for several years employed at the Talbert Mills, in the finishing department, has resigned to accept a position with his father, who is overseer of finishing at the Madison Woolen Company, Madison, Me.

T. B. Rollinson, superintendent of the Knoxville Woolen Mills, Knoxville, Tenn., has resigned.

Patrick Ryan, overseer of carding at the Somerset Woolen Company, Monson, Mass., has resigned. The position has been filled by David McArthur of Pittsfield, Mass.

DEATHS.

Justin A. Ware, at one time treasurer of the Crompton Loom Works, and one of the best known men in the machinery trade, died at his country place in Sandwich a few days ago. He had been in poor health of late. At the time of the consolidation of the Crompton Loom Works and the Knowles Loom Works, Mr. Ware was for a time general sales manager of the Crompton & Knowles Loom Works, but soon after retired from active business to become "a farmer" as he expressed it. He always kept up his old acquaintance among mill men by regular attendance at the different manufacturers' meetings where he had been a familiar figure for many years and from which he will be missed by many old friends.

G. Edwin Duren, a member of the cotton goods commission house of Geo. B. Duren & Sons, 58 Leonard St., New York City, died on Thursday, September 3, at St. Paul, Minn., while on a business trip. He was 33 years of age, and a member of the Arkwright Club, also a member of the Morris County Golf Club.

M. E. George, superintendent of the Chas. M. Davis Company's woolen mill, Northfield Falls, Vt., died at his home in Lebanon, N. H., of ill health. He had been ailing for some time but hopes were entertained that he would recover.

Charles H. Schedd, assistant pay master at the Lancaster Mills, Clinton, Mass., died at his home on Chestnut St, September 1st of Bright's disease and the effects of a paralytic shock. By his death Clinton loses one of its best known residents and the Lancaster Mill an official of especial efficiency. He was born July 24, 1853, and was an Odd Fellow and a member of the Lancaster Lodge at that city.

Wm. Ambrose Taylor died suddenly at his home in Hinsdale, Mass. At one time he was interested in the woolen business at Hinsdale.

Thomas Powell died at his home on Maple St., New Britain, Conn. He was a native of Lancaster, Eng., and came to this country in 1869, was employed at the American Hosiery Company and was an expert mechanic with this company for twenty years. Also has been engaged in business for himself. He was 67 years of age.

James Gaul, overseer of dyeing at S. N. & C. Russell Mfg. Company, Pittsfield, Mass., died at the Hill Chest Hospital in that city as a result of injuries he sustained recently. He leaves a wife and nine children.

New Publications.

[Any work noticed under this head can be obtained through the office of this journal.]

Recent Progress of the Metric System (Les Recents Progres du Systeme Metrique); by Ch. Ed. Guillaume, assistant director of the International Bureau of Weights and Measures; Gauthier-Villars, 55 rue des Grands-Augustins; price $2.00.

Recollections of a controversy that is being rapidly forgotten are revived by this volume, which consists of a report made by M. Guillaume at the last meeting of the Bureau that is supported by various nations at Sevres, France. The author has evidently been hard pressed in his search for evidence of the recent progress of the metric system. As a result of this the reader is told of reports made ten years ago in favor of the metric system by British consuls, of a metric rule made in Saginaw, Mich., of Secretary of the Treasury Shaw's endorsement four or five years ago, and of the acceptance of the metric equivalent of the denier system based on 9 for silk. These are samples of the recent progress of the metric system.

A feature that deserves attention is a mass of misinformation supplied to the author by the officials of the Bureau of Standards at Washington. Such, for example, as the statement that our weights and measures are based on the metric system; that the legal status of the metric is superior to that of the British system in this country; that the metric system is the only one having a legal existence in the United States; that the yard, foot and inch used in the United States differ from the same units as used in Great Britain. To all this is added a sketch of attempts during the past ten years to secure compulsory metric legislation in the United States, this being contributed by Louis A. Fischer of the Bureau of Standards, who minimizes the final failure in 1907. This feature of M. Guillaume's book shows that the effort of the National Bureau of Standards to discredit our fundamental standards of measurement, although greatly weakened, has not yet ended.

Nowhere in this book does the reader find the slightest indication that the author has any appreciation of the recent event of vast importance in the development of the world's weights and measures; that compulsory metric legislation in English speaking countries has been made impossible for many years—probably forever. The text is in French.

Fibers for Fabrics; by A. E. Garrett, B. Sc.; 211 pages, 5 by 7 1/2; Hodder & Houghton, London; price $1.00.

This is a concise, well arranged and convenient hand-book of the leading commercial fibers and will prove useful as a text-book for the student and a work of reference for the mill man or merchant. The contents are grouped under the following heads: Cotton, Wool, Silk, Artificial Silk and Mercerized Cotton, Linen, Other Fibers, Microscopic Structure of Textile Fibers, Chemical Tests for Fibers.

Business Literature.

Cork Inserts; The National Brake & Clutch Co., 16 State St., Boston, Mass.

A 20-page booklet, showing the uses to which Cork Inserts are adapted and illustrating the methods of application. Especially interesting are the types of loom frictions, knitting machine pulleys and mule frictions. The arrangement is excellent, bringing forward by contrast the adaptability of cork inserts to all machinery where frictions are used for power transmission. The relationship between cuts and captions gives a pleasing effect. A formidable list of users, including leaders in a number of lines of manufacture, is given. Copy will be sent on application to interested power users.

The Symbol of Durability; B. F. Sturtevant Co., Hyde Park, Mass.

This booklet is designed to emphasize one of the most important features of the Sturtevant economizer, namely, the metal-to-metal joints. All engineers will appreciate this construction, especially those who have had actual occasion to repair the economizer, for the usual types of economizers using gaskets, rusting, or other forms of joints cause considerable trouble. The fact that the joint is tight without any packing, with pressures up to 300 pounds per square inch, makes it a favorite with the operating engineers.

Dixon's Ticonderoga Flake Graphite; The Joseph Dixon Crucible Company of Jersey City, N. J.

This booklet is printed in two colors, black and red, and this color scheme is carried out on the cover by using a black cover stock and red ink for printing the cover design which shows a title in form of a seal.

Inside the matter is arranged page for page, each page dealing with some particular phase of the graphite subject. At the bottom of the page is given a "third party's" testimony bearing whenever possible on the particular phase treated on that page.

Anyone who is interested in machinery of any sort will probably find in this booklet some matter to interest them. It is not lengthy, quite the contrary, but some interesting and valuable information is given. Any of our readers desiring a copy of this new Dixon booklet may secure it by writing direct to the Dixon Company.

Electric Power Applied to Textile Factories; by Wm. B. Woodhouse.

This is a reprint of the paper read before the Bradford, Eng., Engineering Society and which was published in the July issue of the Textile World Record. It gives a great deal of valuable information in regard to the comparative economy of mechanical and electrical drives.

Cancellations of Orders by Walter S. Newhouse of the New York Bar.

This is the second edition of the pamphlet that was first published about three years ago. It deals with a question of great interest to textile manufacturers and merchants, and will repay careful reading.

Mayo Machine Company's Outing.

On Saturday, Sept. 19, the employes and their families of the George D. Mayo Machine Company of this city, sailed to Lakeshore Park on the steamer Governor Endicott for their second annual outing and shore dinner.

The party left Lakeport, 250 strong, at 9 A. M. and was accompanied by Pease's Band, which played lively airs. The committee on sport, viz: Messrs. F. A. Gordon, E. D. Cotton, E. D. Severance, Carl Swanstedt and Arthur Tilton, started the program of the day, which proved very interesting. First there was a baseball game between the married men and the single men, which was won by the former, 4 to 0. Batteries, Philbrook and Osgood; Taft and Quimby, respectively. Then came the tug of war between the upstairs employes and those downstairs, in which the former won out. The 100-yard dash was captured by E. D. Severance, Percy Philbrook second; standing broad jump, E. D. Severance first, Percy Philbrook second; running broad jump, E. D. Severance first, Percy Philbrook second; fat men's handicap race, C. E. Hull first, Peter Gallagher second; boys' race won by Stratton first, Minnon second; band race, L. B. Holt first, Pease second.

The dinnner, which had been provided by Caterer Page of Lowell and which was a most dainty repast, was announced at 1 P. M. It was spread upon the tables in the grove and was pronounced perfect and everyone present feasted to the full extent of capacity.

Afterwards there was music in the pavilion and dancing and the day's sports completed as follows: Sack race, Johnnie Riley first, Arthur Hellsbon second; potato race, Johnnie Riley first, D. C. Bailey second; three-legged race, J. D. Griffin and D. C. Bailey first, L. C. Dockham and J. R. Riley second.

Mayor and Mrs. William F. Knight, ex-Mayor Frank Drake of Antrim, Harry Daniell, Frank E. Busiel and George D. Mayo were participants in the festivities.

The steamer left the park on the return trip at 4 P. M.

Bleaching Raw Cotton.

The Vacuum Dyeing Machine Co., Chattanooga, Tenn., are now installing their machines to bleach raw cotton. In their process the stock is not rehandled and it is claimed that the work is done with so little effect on the fiber that the carding operation gives no more difficulty than when carding ordinary cotton. This is the special feature of the machine and is of special interest and they ask the attention of mills where cotton is bleached in the stock. Every operation in bleaching by the Vacuum Machine—boiling, chemicking, scouring and washing—is done by the machine. Mr. T. Frusher, 59-61 Pearl St., New York, is selling agent for the Vacuum Dyeing Machine Co., and will be glad to have an interview with any mills contemplating installing such equipment.

Lower Shipping Costs.

The Export Trucking Co., 29 Broadway, New York City, is doing a business which should interest shippers. This concern makes a specialty of handling and distributing carloads of dry goods and other merchandise. Their proposition is for manufacturers to ship their goods to the Export Trucking Co., where small shipments for the same locality will be combined to make carload lots. The saving over the cost of shipping a few cases independently is readily appreciated and amounts, in some cases handled by this firm, to 100 per cent. This, however, depends upon the distance between the manufacturer and the consumer, although a saving of 30 to 40 per cent. is not considered unusual.

While the name Export Trucking Co. suggests the handling of export trade, the company does not confine its efforts to this line and is doing as much domestic business as exporting. The company acts as transfer agent for the Lehigh Valley R. R. Co. Mr. Julius Mentzel, the president and treasurer of the Export Trucking Co., has had many years of experience in this line of work and his company is qualified to handle any business in its line.

Doing a Good Business.

The American Blower Company, Detroit, Mich., reports the receipt of a very satisfactory volume of business since Sept. 1, and adds that there is no indication of a let-up in the demand of manufacturers for the improvement and enlargement of their plants. A few of the contracts received from industrial concerns since the first of September are as follows: Forced Draft Equipment, W. W. Rice Leather Co., Petoskey, Mich.; Salt Dryer, Worcester Salt Co., Ecorse, Mich.; Round House Heating Equipment, Northern Pacific R. R., at Paradise, Mont.; Brick Dryer, Berlin Heights (Ohio) Brick and Tile Co.; Round House Heating Equipment, N. Y. C. and H. R. R. R., at Avis, Pa.; Electric Light Plant, R. Roeme, Douglas, Alaska; Soap Drier, Summit City Soap Co., Ft. Wayne, Ind.; Four sets of Heating and Ventilating Apparatus for a paper mill, Anglo-Newfoundland Development Co., Grand Falls, Newfoundland; Forced Draft Apparatus, Central Union Gas Co.; Heating and Ventilating Equipment, Cellulois Co., Newark, N. J.; Special Gas Exhauster, Lincoln (Nebr.) Gas & Electric Co., Forced Draft Apparatus, Garfield (Utah) Smelting Co.

The Arabol Manufacturing Co.

Finishing compounds for bleached, dyed and printed goods are made in great variety by the Arabol Manufacturing Company, 100 William St., New York. They also manufacture sizing and finishing compound and alizarine assistants for textile work. Tangol, the new German compound, has lately been added to the list.

Besides starches of all kinds they handle China clay, talcum, dextrines, chloride of magnesium and imported potato starch.

A Dodge Field Day.

Youthful exuberance in the whole factory force of the Dodge Manufacturing Co.—everybody being young on that day—finds free expression in the field day outing held annually under the auspices of the Dodge club. Beautiful Lake Maxinkuckee was the place chosen for the 1908 outing. Employes of all departments of the great Dodge works, with relatives and friends to make up a total of more than a thousand, were taken in two special trains direct from Mishawaka to the lake, about forty miles to the southward. In addition to the general pastimes of boating, bathing, fishing and other diversions of a big family picnic, there was a program of field events, consisting of races, contests, water fight, games, etc., in which many were entered and from which much amusement was derived. The Dodge company met all expenses of transportation, bands, orchestra, and other general features of the undertaking.

The Construction of Dye House Floors.

The construction of dyehouse floor is deserving of far more consideration than it has heretofore received. Its life depends both upon the material selected and the manner in which it is utilized. Roughly speaking, its durability is proportional to its first cost.

The relatively cheap wood floor is predestined to short life whether built of a single thickness of Southern pine with open joints, or as a solid floor of spruce plank with oak top. Its endurance may be increased by kyanizing, which treatment is now generally given to the lumber.

For small dyehouses with light trucking, cement concrete with granolithic top is durable and reasonably inexpensive. But it is very difficult to repair when wear or surface disintegration once occurs. To a certain extent this may be avoided by making the runways for heavy trucking of iron plates or gratings laid in the cement and filled with concrete.

A material which will stand heavy trucking in the dyehouse and wet finishing room is vitrified brick. When this is laid on a bed of concrete and the bricks are thoroughly grouted, it will last for years. In one mill, designed by Chas. T. Main, mill engineer and architect, of Boston, this type of floor has been in use for about ten years, but as yet shows no sign of wear. If breakage should occur in any portion, it can easily be repaired by putting in one or more new bricks.

Cocheco Textile Association.

An association has been organized among the heads of departments of the Cocheco Mfg. Company to bring into closer touch the men who assist Agent Fish in the successful operation of the plant. Membership is limited to department heads in the Cocheco Company, comprising about 50 men. The honorary members are C. H. Fish, agent; H. W. Owen, supt. cotton mills; R. A. S. Reoch, supt. print works; Thomas Kelly, supt. velvet mills.

The first board of officers have been elected as follows: A. E. Bickford, pres.; F. C. Hall, sec.; W. F. Milner, treas. The executive committee consists of the president as chairman, and W. C. Pierce, C. C. Ray, E. O. Crosby and J. W. Davy.

Suitable quarters have been fitted up for the use of members and their guests in the Union Building.

An Ancient Business House.

While Philadelphia is celebrating its 225th anniversary, it is interesting to note that the makers of the Rhoads' leather belting have inherited the business that dates back 207 years and has been handed down directly from father to son through six generations in America. Their business was established in 1701. In 1699, John Rhoads, cordwainer, from Derbyshire, England, bought a tract of land in Delaware County, Pa., for his son, who two years later established a tanyard thereon. The senior member of the present firm of J. E. Rhoads & Sons was the fifth and last in the line to operate this tannery. In 1868 he moved to Wilmington, Del., where he has since been engaged in the leather business, his sons now being the active members of the firm. A grandson also is employed as a tanner and chemist in producing their special tannages, of which the tannate round and flat belting, the tannate lace leather and the watershed belt are made.

To the good old ways handed down from their ancestors they have been alert to apply science and experiment and to add improvements in methods and machinery which stand the test of use. They have a modern factory of large capacity, and their methods, equipment and output conform to the best standards of 20th century belt making.

Those who have for years used the Rhoads' leather belts know the service that they give, and it is the constant aim of this ancient house to furnish full value in the service rendered by their goods.

Increased Mail Handling Facilities at Ampere.

The Crocker-Wheeler Company, manufacturers of electrical machinery, have built a brick and cement post office building on their grounds in order to facilitate handling the increasing volume of mail at Ampere, N. J. The new building is of what might be termed the "Federal" style of architecture and will add to the pleasing appearance of the company's grounds. The interior is finished in a quartered oak with a mosaic tile floor. Upon the walls hang a fac-simile of the Declaration of Independence, with coats of arms of the States, the constitution of the United States and an autograph letter and portrait of A. M. Ampere, for whom Ampere is named and whose name is also used throughout the world to designate the unit of electrical current.

Boiler Scale and its Prevention.

Much information regarding the cause and formation of boiler scale, its effects and the best means of its prevention are clearly presented in the following extract from a report rendered some time since by Arthur D. Little, chemist of Boston, to one of his clients:

"All water, especially surface waters, contain more or less mineral matter in solution which remains in the boiler as an encrustation when the water is boiled away or converted into steam. The mineral ingredients most commonly found in water and which cause the formation of boiler scale are the salts of Calcium and Magnesium. When the water is converted into steam these substances gradually separate out from the solution in the form of deposits and coat the inner surface of the boiler with scale.

"Scale formation is detrimental in several ways. It is a non-conductor of heat and the fires must therefore be driven harder to accomplish the same results. The water becomes separated from the boiler plates and these latter become overheated and are gradually burned out. The tubes and feed-pipes of the boiler become more or less clogged and consequently become less efficient. Some of the scale forming ingredients, especially Magnesium Chloride, also exert a corrosive action upon the iron.

"The aim of a boiler compound is to convert these substances into insoluble compounds which settle in the form of sludge or mud and can be removed from the boiler by blowing or washing.

"We could prepare a list of nearly two hundred materials which are known to have been used for boiler cleaning purposes, but there are only four of these which are worthy of mention. They are: Soda Ash or Sodium Carbonate, Caustic Soda, Tannin, Kerosene.

"Soda Ash is an alkali and will neutralize any acid in the water, and also precipitates salts of Lime, Magnesia, Iron, and Aluminum, in the form of soft sludge which can be easily removed when the boiler is cleaned.

"Caustic Soda is also an alkali and neutralizes acids and in the precipitation of the various salts.

"Kerosene is used in connection with the above to prevent foaming or priming.

"Tannin is also used to prevent foaming or priming, and will precipitate certain mineral matters, although it is not so efficient in this respect as soda ash or caustic soda."

Precautions Against Anthrax.

The British government has issued the following regulations to come into force Jan. 1, 1909, for the use of East India wool:

2. No East Indian wool or hair shall be treated in any dust-extracting machine unless such machine is covered over, and the cover connected with an exhaust fan so arranged as to discharge the dust into a furnace or into an intercepting chamber.

The dust collected in the intercepting chamber shall be removed at least once every fortnight.

3. The occupier shall provide and maintain suitable overalls and respirators to be worn by the persons engaged in collecting and removing the dust.

4. No person employed shall treat East Indian wool in any dust-extracting machine otherwise than as permitted in regulation 2.

5. Every person engaged in collecting or removing dust shall wear the overall and respirator provided in accordance with regulation 3.

6. If any fan, or any other appliance for the carrying out of these regulations is out of order, any workman becoming aware of the defect shall immediately report the fact to the foreman.

Improper Sizing of Piece Goods.

There is no need whatever to use zinc or magnesium chlorides in the sizing of goods that are to be bleached or dyed, though I fancy the custom is largely due to the preference of certain grey men for a particular "feel" or finish caused by these salts, which finish is, however, entirely removed in the scouring process. These salts are legitimate enough for goods that are to be exported in the grey state and where the zinc must be used to prevent mildew. The magnesium is used to increase weight or to preserve a soft feel, perhaps for both purposes. The salts, of course, are used to some extent by sizers to economize tallow, but the risk of having a large amount of cloth damaged in consequence of the liberation of acid in the firing process is so great that no sizer of experience thinks of using those salts except when he knows that the cloth is not to be fired or singed.

My main object is to point out certain insidious means whereby these salts are sometimes, and, I regret to say, not infrequently, introduced. Many of the "softenings" and practically all the "tallow substitutes" in use contain either magnesium or zinc chloride, or both. This often accounts for goods coming up "tender" in singeing, and as a rule the sizer is very much annoyed to be told that he has been using those salts in his mixings. He generally says that he never had an ounce of such stuff about the place, and would not use it if he had.

Reports have from time to time been made as to weft yarn being treated or artificially weighted with such dangerous salts, either with or without other material, and however far this may have been a myth in the past, the practice certainly exists today to a limited extent. Certainly the yarn retains its strength somewhat better when treated in this way, and it also retains moisture to an extent which may be beneficial to the seller, but the danger of "tender" cloth is considerable. It is doubtful whether it can be considered "safe" to use any of these salts for such goods as those in question, in however small amount, and if very minute quantities are used they can have no practical benefit in the desired direction.

It is quite true that some goods treated with zinc and magnesium in small amount get through the critical singeing process without such damage as to cause complaint, but it is equally true that such goods are in fact damaged, and that actual wear by the consumer shows up their inherent weakness. It must by no means be assumed that

because goods are accepted by a merchant they are as sound as they should be with proper treatment.—"Pure Size," in Manchester Guardian.

Theodore Roosevelt, Jr., to Learn Carpet Manufacture.

Theodore Roosevelt, Jr., son of the President of the United States, has started his business career in the plant of the Hartford Carpet Company, Thompsonville, Conn. He will begin his duties in the Hartford Co.'s wool room and advance through the various departments as he masters the operation of each. Mr. Roosevelt graduated from Harvard last June.

The Hartford Carpet Co. has capital stock of $5,000,000 and operates 840 looms on Axminster, Wilton, and Brussells carpets. R. P. Perkins is pres.; A. D. Higgins, vice-pres.; G. E. Perkins, treas.; G. W. Squire, sec.; and W. E. Lyford, supt. in charge of manufacturing. Mr. R. P. Perkins was a classmate of President Roosevelt at Harvard.

A Wonderful Industrial Plant.

A SKETCH OF THE GENERAL ELECTRIC CO.

One of the interesting features of the Saratoga Convention was a trip taken to the plant of the General Electric Co. at Schenectady. A history of this gigantic concern strikingly emphasizes the wonderful growth, not only of the electrical industry, but of American enterprise under modern and scientific management.

Up to 1892, the development of electric lamps and motors was still in its infancy. With the organization of the General Electric Company with headquarters at Schenectady, N. Y., the electrical business began a development which has been, and still is, the marvel of the age. Never before in the history of manufacturing has such progress been recorded. Invention followed invention, discovery followed discovery until it seemed as though the public was introduced to new electrical marvels every day. Soon electric lights were blazing and electric street cars running from coast to coast and in the most distant countries of Europe, South America, Africa and Asia. Water powers are harnessed all over the world; steam railroads are electrified; ores are mined and smelted with electrical power, and the end is not yet.

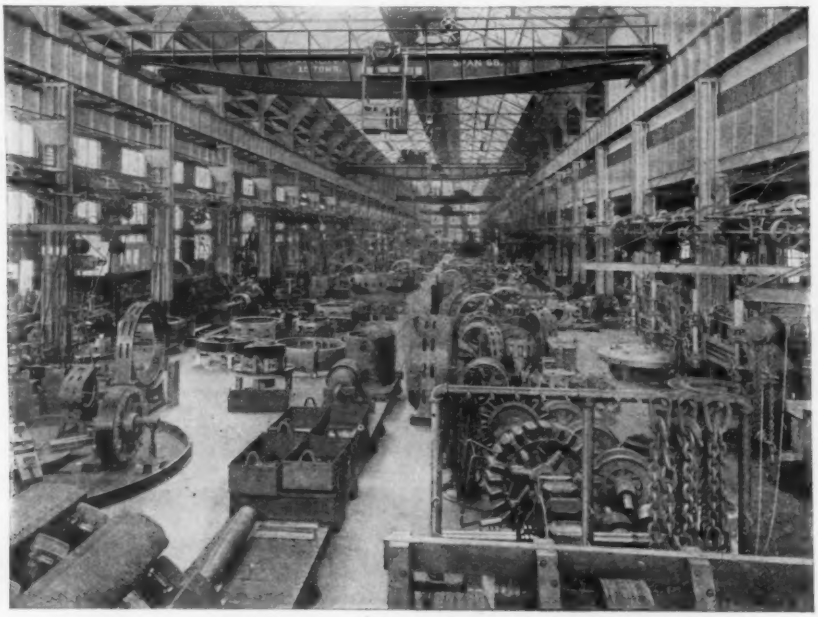
Taking the foremost part in this development, it is not strange that the General Electric Company should grow with the industry until it has become the largest manufacturer of electrical machinery in the world. The company now employs nearly 30,000 wage earners at its plants in Schenectady, N. Y.; Lynn, Mass.; Pittsfield, Mass., and Harrison, N. J. Its factory buildings cover the larger portion of nearly 500 acres of land and contain over 7,000,000 sq. ft. of floor space.

The main office of the company and its largest plant is at Schenectady, N. Y., where 16,000 wage earners are employed. This plant has a floor space of nearly 4,000,000 sq. ft. There are 100 large factory buildings and over 50 smaller ones. The Schenectady plant is a city within a city. The 16,000 employes, who spend the greater portion of each working day at the plant, constitute the population of a city and are governed and protected independent of Schenectady. The company maintains its own fire department, both paid and volunteer, with up-to-date apparatus. A private police force patrols the grounds and buildings night and day. The buildings are connected by telephones, pneumatic mail tubes, automobile express and messenger service. The company even maintains its own restaurants for employes where good, clean food is served fresh from the electric ovens at a nominal cost. There is also a private hospital where the accidentally injured are taken care of until they can be transported to the city hospital.

The streets throughout the Schenectady plant throb with life and activity. Electric engines are pulling loads of machinery from building to building; employes are hurrying about; horses and automobiles help to make it appear like a busy city. As some one has said, "It is almost a college education" to visit this busy plant and this is true in every sense of the word. The buildings are arranged after a comprehensive plan so as to be readily accessible and well lighted. Beneath the streets is a system of wires carrying heavy currents, pneumatic tubes hurrying mail, drawings and blue prints; steam pipes utilizing the exhaust steam from the power plants to heat the buildings; telephone lines, etc. In the arrangement of the machinery special care is taken to provide for the safety and comfort of the workmen. The company practices what it preaches and throughout the plant electric power is used for everything. Whenever possible the motors are direct connected to the machine.

The first building of note is the large main

office structure of five stories. In this building the business of the company is accomplished after the most approved systems and the lesser offices are located throughout the plant so as to be near the scenes of operation. In the drafting department adjoining 400 skilled draughtsmen are employed and more than 250,000 drawings are on file in specially constructed fire-proof vaults. About 35,000 new drawings are added every year. Nearby on the same street is the large laboratory building where the skilled chemists are busy—not in turning baser metals to gold—but in devising new methods to convert the rivers and streams of the world into power producers, to turn electricity into heat and light in more economical ways, and to devise new things for the busy current to accomplish.



Building after building is devoted to the manufacture of motors and generators. In one of the first group of buildings beyond the office the rough castings received from the immense foundry further down the street are machined and fitted ready for the armatures. The thin strips of sheet steel are punched by busy presses and assembled to form the armatures. Insulations are prepared, tested and combined; wires and copper strips are covered and protected with tough insulating fabrics and armatures are wound with these conductors. The various separate parts are assembled, the whole machine tested, painted, boxed and loaded on freight cars for shipment in the ninth and last building of the group. The finished product is carried away in long freight trains each day.

In one of these shops the largest high voltage transformers in the world were built for the Great Western Power Company of California. In another, the largest induction motor in the world, a 6,000 horsepower machine, was constructed for the Gary Steel Company.

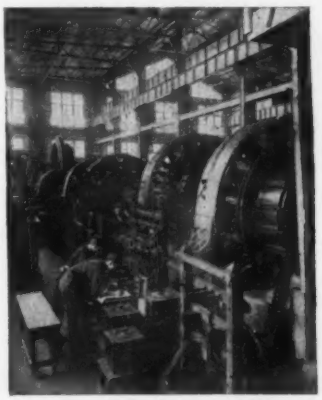
In this connection it is of interest to note the part that this company has played in the development of the textile industry. General Electric induction motors were installed in the first electrically operated textile mill in the world, this installation consisting of 17 motors representing a total capacity of 1,105 horsepower. From this modest beginning the use of General Electric motors has grown to such proportions that today over 200,000 horsepower in motors, both alternating and direct current, are employed in about 400 textile mills. In these mills over 2,400 textile machines are operated by individual motors, the method used in each case, however, being decided upon only after a careful study of the situation. Building 18 affords a convenient opportunity for observing the induction motor during the processes of winding, assembling and testing.

THE TURBO-GENERATOR SHOP.

The principal point of interest in the whole plant centers around building No. 60, the largest machine shop in the world, where the Curtis steam turbo-generators are built. This mammoth shop covers nearly 6 acres of floor space under the one roof and is 800 by 300 feet in size. A view of the working floors from the top gallery is awe-inspiring. The workmen are dwarfed beside such huge machines as the largest boring and planing machines, some of them the largest in the world, and the mammoth turbine generators, some of the largest of which are capable of delivering 20,000 horsepower from a single unit. Giant cranes handle the costly steel castings with almost human

intelligence and with the greatest ease and care. Whole trains are run into this building to be loaded or unloaded. During the last year turbo-generators of an aggregate capacity of over 1,500,000 horsepower have been sold for use in this country, England, Germany, South Africa, Mexico, Japan, Brazil, New Zealand, Siam, Peru and Spain.

The rapid increase in the number of turbines sold for use in textile mills is evidence of its superior value for this class of work. To the low operating and maintenance costs is due much of its popularity, although its simplicity, high efficiency and capacity for heavy overloads are also prominent features. Some one has said that the ideal equipment for a textile mill is a steam turbine in the power house and induction motors in the mill, these latter driving groups of machines



are direct connected to individual machines as the conditions make advisable. Even in mills where the reciprocating engine is used, generating sets, consisting of a small Curtis turbine and a direct current generator, are used to furnish power for lighting.

BRASS FOUNDRY.

The brass foundry, which occupies a two-story building of brick and steel, 260 feet long by 90 feet wide, gives constant employment to upwards of 150 men. The foundry is well served by traveling cranes of various capacities. Healthful working conditions as well as the use of improved machinery combine to bring about the most efficient production.

IRON FOUNDRY.

The main building contains a floor area of about 180,000 sq. ft., and there are in addition numerous sheds for the storing of foundry supplies, of sand, coke, etc. The building is well equipped with cranes for the handling of the molten metal and castings. The weekly output is at present about 600 tons of finished castings. An interesting feature is the cleaning of the rough castings by the sand blast.

SWITCHBOARD DEPARTMENT.

Fifteen years ago the manufacture of switchboards consisted in the placing of the necessary switches on a wooden frame work and at that time 30 men in one small shop were able to supply the demand. The switchboard department now employs over 800 men and occupies over 100,000 sq. ft. Complete switchboards in size from the single panel board for isolated power stations to the controlling apparatus for central stations of 50,000 kilowatts capacity are manufactured and assembled at the Schenectady works.

TRANSFORMER DEPARTMENT.

This department occupies a building 100 by 855 feet. The entire organization for the designing, draughting, manufacturing, testing, and shipping of transformers is contained within the one building. Moreover, all transformer parts, except the castings and punchings are made in the building. Between 75,000 and 80,000 kilowatts per month are manufactured and tested. This is represented by units from 15 kw. in size to 10,000 kw. High voltage transformers for testing insulation are provided, including one large transformer capable of producing 300,000 volts. Special precautions are taken to prevent testers receiving fatal shocks. Each transformer, when under test, is enclosed in a pen about six feet in height. On opening the gate to the enclosure all voltage is automatically removed from the transformer under test. At the present time, however, the Transformer Department is being moved to the works at Pittsfield, Mass.

MACHINE SHOPS.

Some machine work is done in nearly all of the shops, but is confined principally to buildings 5, 9, 10, 16 and 60. The large number of motor driven portable machine tools is likely to draw comment from the most casual observer. Nor is the electric drive confined to portable tools, for there is a striking absence of line shafting and belts in all of the shops, as all machines are either direct driven by motors or when several machines are closely related in the finishing of a piece of work the group method of driving is used. Building 16, 850 by 160 feet, with its 3 1/2 acres of floor space and modern equipment, affords excellent facilities for handling the largest castings. Twelve thousand square feet of iron floor plate is provided on which castings may be set up and worked on by electrically driven portable tools. The handling of castings is facilitated by a complete crane equipment.

THE TESTING DEPARTMENT.

One of the many novel features is the testing department, where six hundred students test the various completed machinery and acquire the finishing touches to their technical education. Forty states are represented in this department and eighteen different countries. Students from thirty-two different foreign schools and eighty-three American colleges and universities can be found working in the testing department.

An efficient school for apprentices covering a four-year course is also maintained, whereby a large class of skilled mechanics is turned out annually to take the positions of foremen and assistants in the mechanical departments.

The General Electric Company is an institution that ranks among the foremost in the world today. It is said upon good authority that the company employs a thousand inventors who are working continually for the benefit of mankind to make electric power, heat and light better and cheaper for the consumer. The technical colleges of the country are searched annually for the brightest graduates for each branch of industry.

Yearly the company has been enlarging its factory buildings in order to keep pace with the increase of business. The pay rolls increase in proportion with the business and what the future of the concern will be and what it will mean to the industrial world, can only be guessed at.

The selling organization of this company is the envy of the business world. Salesmen are educated to their respective lines by the company and perfected for the work in hand before they are sent out. Local offices are maintained in all the principal cities of the United States and foreign countries, for the General Electric Company hustles for the business of the world as well as that of the American continents.

Aniline Poisoning.

A coroner's inquiry was held at Wigan recently relative to the death of a dyer named John Ash, 21, of 18, Mariebonne, Wigan, who had died in the Wigan Infirmary from the effects of aniline poisoning.

Evidence was tendered to show that Ash was employed at the Haigh Dyeworks, and that he was in the act of taking the plug out of a cask of aniline oil when the contents of the cask splashed over his face and clothes. He reported the mishap, and after washing himself continued working for half an hour. He then walked home, but had to stagger into the house, where he complained of having been "gassed."

A doctor was called and he was removed to the Infirmary. Mr. J. Wilson, who represented the relatives, cross-examined the workmen who came forward as witnesses, and elicited the statement that the employes did not know that Ash was being gradually poisoned during the time he was wearing his wet clothes; in fact none of them knew the danger Ash was running by continuing to wear his clothes after the accident.

Dr. Edmondstone, house surgeon at the Infirmary, stated that Ash was unconscious when admitted to the institution, and his coat, vest and shirt were wet with aniline oil. The man's skin was livid and his fingers and hands were stained. When he tried the man's blood he found it to be black. From the post-mortem he came to the conclusion that death was due to aniline poisoning, which had been absorbed through the skin.

Dr. Lake, the Home Office Medical Inspector, said the attention of the Home Office was first called to the dangers of aniline about four or five years ago in consequence of complaints from Manchester and Bradford dyeworks. He made an investigation, and examined over 100 workers and found that the evidence of illness was clearly established, that illness being caused both by the fumes from aniline and from the oil being absorbed into the skin. The symptoms were greenish discoloration of the skin, drowsiness, palpitation of the heart, and indigestion, but there was no case like the present one, of sudden illness and death.

As the result of the inquiry a memorandum was issued from the Home Office requesting that steps should be taken to prevent, as far as possible, chronic forms of poisoning by having proper ventilation, provision for food and overalls, so that clothes could be changed when wet with aniline. This particular case was a most unusual one, and he was convinced it was not incidental to dyeworks—it was an accident resulting from the method adopted of emptying the aniline oil from the tank. The aniline should have been got out by means of a tap so as to prevent splashing. There was more danger by the absorption of aniline into the skin than there was from inhalation of the fumes. If Ash had changed his clothes immediately he would probably have recovered.

A verdict of "Accidental death" was returned, and the jury recommended the Company to take into consideration Dr. Lake's suggestions.—Manchester Guardian.

Gift to Columbus School.

The Klauder-Weldon Dyeing Machine Co. of Amsterdam, N. Y., has recently presented to the Board of Trustees of the Public Schools of Columbus, Ga., one of their sample dyeing machines, which is installed in the Secondary Industrial School of that place.

At a meeting of the Board of Trustees held on the 15th of September, appropriate resolutions of thanks were passed, testifying to the appreciation of the gift and the generosity of the donors.

Resolved, That the Board of Trustees of the Public Schools of Columbus, Ga., extends its sincere thanks to the Klauder-Weldon Dyeing Machine Company for its liberal gift of a dyeing machine, in favor of the Secondary Industrial School of Columbus.

Resolver, further, That the Board hopes to evidence a more substantial appreciation of their gift in making this school the initial step in the establishment of a great industrial educational institution, not only for Columbus and Georgia, but for the southern section of our common country.

*Mississippi, Wesson. It is announced that the Textile Mill Corporation, with plants at this place and New Orleans, will supply cotton bagging to the farmers of Mississippi this season. The product will come in 70 yard rolls, weighing from 11 to 12 ounces a yard. The price is in excess of jute, but it is stated there will be a saving in tare. The striking operatives of the New Orleans plant have not returned to work in any great numbers.

PAPERS READ AT SARATOGA CONVENTION.

The Cancellation of Orders.

(Continued from page 127.)

The writer in making the above suggestions to various houses, has been met by the objection, "We don't like to insist upon such a thing, for the buyer might think that we were questioning his good faith." The answer to this is, that when a man enters into an obligation which he intends to fulfill, he does not hesitate to commit himself in writing, and if the buyer refuses to sign such a memorandum it must certainly be apparent that he will not fulfill his contract unless it suits his interests so to do. It would seem that such a class of trade can well be dispensed with.

In order to establish such a system in the present demoralized condition of the trade, concerted action is necessary, and it is believed that the time must come, and soon, when a policy similar to the one outlined will be adopted by all mills and commission houses, and in fact since the publication of the first edition of this pamphlet in which this suggestion was made this course has been adopted with satisfactory results by many houses.

PART DELIVERY AND ACCEPTANCE.

In the event that an order has been given which the buyer declines to acknowledge, and there is not a sufficient memorandum in writing to create the contract, the next question to determine is whether there has been such a part delivery and acceptance of the order as will enable the seller to enforce the contract.

As to this, each transaction stands upon its own particular merits and resolves itself into the question of the intent of the parties.

Thus, if an order has been given for five hundred pieces of a certain quality and price of goods, a delivery of a "sample cut" or "selling sample" will not, it is believed, constitute a part delivery and acceptance, whereas, a delivery of a "sample piece" would constitute an acceptance under the contract, provided the mill could show that the piece was delivered with that intent and was charged up against the particular order.

The mere fact that the buyer has not paid for the piece delivered, and subsequently cancels his order, does not release him from responsibility. The statute does not require payment on the part of the buyer, merely acceptance.

REASONABLE TIME FOR ACCEPTANCE.

The receipt by the buyer of sample pieces does not of itself constitute the acceptance required by the statute.

The buyer must have a reasonable time within which to inspect the goods to see whether they conform to the order. What is a "reasonable time" is, of course, a matter to be determined by the facts of each particular case.

If a buyer receives a part of the goods, and after a reasonable opportunity to inspect, does not raise any objection to the quality of the part received, he will not be permitted for the first time upon receipt of the balance of the order to raise such objection, provided the balance is of the same quality as the part delivered.

SALE BY SAMPLE.

Where there is a sale by sample the sole obligation on the part of the mill is to furnish goods in accordance with the sample shown, and goods which so conform must be delivered.

The mere fact that goods when received may not "make up right" affords no excuse for a cancellation of the order, and the buyer can be compelled to perform, if the goods offered are of the same quality as the sample shown when the order was given.

As disputes between buyer and seller most frequently arise on the point as to whether the goods delivered are like sample, it will afford protection to the mill to have it appear upon the written "confirmation of the order" that the sale was made by sample, and to attach thereto a small sample of the goods ordered, leaving a duplicate sample with the buyer.

In cases where sale is not made by sample, but merely by description, as often happens, the only thing that the seller warrants is that the goods are merchantable—that is, that they are free from extraordinary defect, and such that they would be salable among merchants in that particular class of goods under the description given.

GOODS TO BE USED FOR A SPECIAL PURPOSE.

Unless goods are bought for the special purpose of being made up into a particular line of garment, and this fact is made known to the seller at the time of giving the order, there is no implied warranty on the part of the seller that the goods sold will make up satisfactorily for that or any other particular use.

If it is the intention of the parties to the contract at the time of the giving of the order that the goods ordered are to be used for such a special purpose, that fact should clearly appear upon the face of the contract, and if it does not, there is no responsibility on the part of the mill, provided the goods are either like sample or merchantable.

GOODS MADE TO ORDER.

The general rule that in order to constitute a valid contract for the sale of goods, there must be either part delivery and acceptance of the goods or a sufficient memorandum of the contract in writing, has, in most states of the Union, an exception in cases where the goods ordered are not in existence at the time of the giving of the order, and are manufactured out of raw material solely for the purpose of filling the particular order given. In other words, if the order is not filled out of stock, but the goods are especially manufactured to order and their manufacture is not begun until after the giving of the order, the purchaser can be held to his contract if the goods have been made in whole or in part before the cancellation of the order, even though there is no memorandum in writing signed by the party to be charged and although no part of the goods has been received by the buyer.

REMEDY OF THE BUYER.

Although in the vast majority of cases it is the buyer who attempts for various reasons to rescind the contract of purchase, and to relieve himself from the necessity of accepting goods ordered, yet on occasion the seller may likewise find himself unable to make deliveries in accordance with his contract. Under such circumstances if he declines to release the seller, the buyer of the goods has the following remedies:

1. He may go into the open market and buy at the market price goods which most closely resemble those contracted for, and hold the seller for the difference between the contract price and the market price.

2. He may recover at once from the seller the profit which he would have gained had the seller lived up to his contract to deliver, and that profit would usually be the difference between the agreed price of the goods and their fair market value as advanced at the time and place of delivery together with interest.

Of course if the price of the goods has declined between the date of the contract and the time of delivery, there will be no loss, and hence can be no recovery.

If, however, the buyer upon the faith of his contract of purchase has entered into other contracts dependent upon the original contract and cannot perform such other contracts because of the failure of the mill to furnish the goods, he is then entitled to recover from the seller not alone the difference in price, but also such other damages as he has sustained on account of such failure of the mill to deliver.

This rule will apply in cases where the buyer has resold in advance at a profit the goods purchased from the mill.

THE SELLER'S PRIVILEGE.

When a sale has been made under such circumstances that the seller can enforce his contract and the buyer refuses to perform, the seller has three remedies to pursue:

1. He may store and retain the property for the buyer and sue the buyer for the entire purchase price.

2. He may sell the property for the buyer's account and recover the difference between the contract price and the price obtained upon the resale; or,

3. He may keep the property as his own and recover the difference between the market value of the goods at the time and place of delivery and the contract price.

With these privileges the seller who has taken the precaution to see that his orders are properly taken and acknowledged, is in a position to stand upon his rights and to insist upon performance on the part of the buyer; and when the time comes and buyers see that there is concerted action on the part of sellers to enforce their rights, then, and not until then, will contracts be lived up to and cancellations instead of being the rule will become the exception.

The Low Pressure Steam Turbine.

CHARLES B. BURLEIGH, Boston Mass.

To analyze and discuss all of the items which when combined represent the manufacturing cost is beyond the scope of this paper. The writer will, however, endeavor to present for your consideration some facts which it is hoped may be of material assistance in reducing to a minimum one of these items, the importance of which varies materially with the class of goods manufactured, namely, the production of the power for operating the producing machinery.

You will agree with me that this desirable result can be accomplished if every pound of steam generated in your boilers can be so utilized as to deliver in useful work from 25 to 100 per cent. more available power than is at present being obtained under such conditions as not to increase the cost of the other items.

The prime object of this paper is, therefore, to call to your attention a recent engineering development which will effect immense gains in capacity and economy in existing power plants without involving any sacrifice or abandonment of any part of the present equipment, accomplishing this result with a minimum of additional investment.

While the reciprocating steam engine is a highly efficient piece of apparatus for utilizing the available energy of steam between boiler pressure and atmospheric pressure, it is a comparatively inefficient piece of apparatus for utilizing the available energy of the steam and in its lower ranges below atmospheric pressure.

On the other hand the supremacy gained by the steam turbine has been largely due to the fact that it as efficiently utilizes the available energy of steam in the lower as in the higher pressure ranges, and there being as much available energy in steam below the atmospheric line as there is above it, we are led to the investigation of the results to be obtained from the use of the reciprocating unit in its most economical field (the higher pressure ranges) combined with the turbine for the most economical transformation of the low pressure ranges.

THE LOW PRESSURE TURBINE.

The low pressure turbine designed to take steam at one pound gauge pressure and efficiently utilize its energy in the lower ranges to one-half pound absolute, or, in other words, a 29-inch vacuum, at water rates from 30 to 50 pounds per killowatt hour at the switchboard, in accordance with size and local conditions.

The low pressure turbine can be advantageously applied in any case where reciprocating engines are now used, and their application will always afford a large improvement of economy and increase the power output without increase of boiler plant.

This applies whether engines are now operated condensing or non-condensing, delivering their output electrically or mechanically, and also applies to engines which operate on intermittent loads, since the delivery of low pressure steam can

be equalized by suitable steam regenerating apparatus.

In many existing plants engines are operated non-condensing because cooling water is not conveniently available.

Such practice may be legitimate with reciprocating engines because the gain by condensation with engines is comparatively small and, in many cases, may not pay for the additional complication and expense, incident to the installation and operation of cooling towers or condensers.

If low pressure turbines are used, however, we can expect to obtain about as much power from the turbine working below the atmosphere as we do from the engine above the atmosphere, and with this great gain obtainable there can be no question as to the economy of installing condenser facilities and low pressure turbines, even when cooling towers would be required.

There are already in existence plants where low pressure turbines have been installed in connection with engines previously used non-condensing, and by such installation with cooling towers, the output of the plant has been practically doubled without any addition to fuel consumption or attendance. Permit me to be specific in this statement and cite a 1,000 horsepower non-condensing engine plant operating 3,000 hours per year at 2.5 pounds of fuel per horsepower or 3,750 short tons of coal per year.

By the addition of a 1,000 horsepower low pressure turbine with a suitable cooling tower, made necessary by local conditions, capable of maintaining a 28-inch vacuum the plant was made to deliver 2,000 horsepower 3,000 hours per year at 1.25 pounds of fuel per horsepower hour or 3,750 short tons of coal per year. The plant as doubled in output required no addition to the boiler equipment nor was any additional labor made necessary.

The most ready field for the introduction of low pressure turbines is found in existing condensing plants which operate with reciprocating engines. In such plants immense gains can be accomplished by the use of low pressure turbines either with existing condensers or with improved condensing facilities. The gain by high vacuum in turbines is so much greater than in engines that it will generally be worth while to install condensing facilities of the most improved kind with the most improved pumping facilities. Where low pressure turbines are installed, the exhaust pressure of engines will be above the atmosphere. There will, therefore, be no air leakage around piston rods and valve stems, and it will be possible to maintain better degrees of vacuum than those which are generally experienced in condensing engine plants where there is more or less leakage of air and little incentive for the production of high vacuum.

The possibilities of the low pressure will be more readily understood if we consider the available work in different ranges of steam pressure. If saturated steam operates from a pressure of 150 pounds gauge to a pressure of one pound above the atmosphere, the available energy is about 132,000 foot pounds per pound, and if saturated steam operates from a pressure of one pound of steam above the atmosphere to a vacuum of 28 1/2 inches, the available energy is 146,000 foot pounds per pound of steam. In a mixture of steam and water issuing from an ordinary steam engine exhausting at a pressure of one pound above the atmosphere, the above available energy is reduced to about 132,000 foot pounds per pound if we work to a vacuum of 28 1/2 inches. Thus under these very ordinary conditions there is as much work available in the low pressure ranges as in the high. In a turbine properly proportioned for such work the efficiency in these low pressure ranges is better than the high pressure part, while in the reciprocating engine the return from the low pressure steam is relatively very small.

In most condensing engines the gain over non-condensing conditions does not exceed 30 per cent. even under the most favorable conditions of load, and under overload conditions the gain by condensing is much smaller. In most cases a reciprocating engine which is operated condensing will give at least 75 per cent. of the output with the same steam used non-condensing. This steam being taken into a low pressure turbine with good condensing facilities will add nearly, if not quite, as much work as it gives in the engine. We can, therefore, under ordinary conditions get a net gain of 50 per cent. over existing condensing engine service by installing low pressure turbines, and under overload conditions where the efficiency of the engine falls off and where its gain by vacuum is greatly diminished, the rate of improvement will be much better.

[The author then discusses in detail, with diagrams, several specific installations, which may be obtained by interested parties complete in pamphlet form.]

Immense benefit can be derived from the use of low pressure turbines in mechanically operated manufacturing plants. Take for instance a mill or other manufacturing establishment mechanically operated by means of belts or ropes where an increase is desirable and either due to the shape or position of land available this addition cannot be economically or satisfactorily reached by belting and shafting, the low pressure turbine offers an ideal solution of the problem, permitting the electrical operation of the sections which are awkward to reach mechanically.

In closing caution should be made not to entertain a wrong impression of the idea intended to be conveyed, that is, I feel that the turbine will more economically utilize the steam energy, both above and below the atmospheric line than the reciprocating engine and therefore is entitled to first consideration in a new installation, but where an increase is necessary to an existing reciprocating plant, the low pressure turbine can oftentimes be used to better advantage than any other piece of apparatus, without entailing increase in boiler plant or buildings proportionate to the increase in capacity, and in many cases without any increase of the items mentioned.

New York, Long Island, Patchogue. A number of union weavers employed by the Patchogue Mfg. Co. left their work on account of difficulties between the union and non-union help. The plant is being operated by about two-thirds of the full number of hands. Lace curtains are manufactured on 38 looms.

Recent Textile Patents.

BRAID and Other Narrow Fabrics. Packet for. 897,628. Chas. S. King, Pawtucket, R. I.

BRAIDING MACHINE. 897,382. Jacob Lundgren, Philadelphia, Pa., assignor to Samson Cordage Works, Boston, Mass.

BRAIDING MACHINE. 897,551. Jacob Lundgren, Philadelphia, Pa., assignor to Samson Cordage Works, Boston, Mass.

BRAIDING MACHINE. 898,939. Ferdinand Thun, Wyomissing, Pa.

BRAIDING Machine Bobbins. Safety Regulator for. 897,648. Thos. F. O'Brien, Perth Amboy, N. J.

BRAIDING MACHINE. Cord. 898,938. Ferdinand Thun, Wyomissing, Pa.

COTTON-PICKER Machine. 897,320. Amasa St. Onge, Providence, R. I.

COTTON. Plant for Handling Baled. 897,972. John R. Fordyce, Atlanta, Ga.

COTTON. Plant for Storing and Compressing. 897,971. John R. Fordyce, Atlanta, Ga.

FABRIC. 898,941. Emil J. Vogel, Lawrence, Mass.

FABRIC COVER. Textile. 897,583. Frank B. Burns, New York.

FIBER-CLEANING Machine. 899,070. Angel Pons, Buffalo, N. Y.

FIBROUS Stalks or Plants. Producing a Solvent for Retting of Blast. 897,522. Mary H. Colahan, Chicago, Ill.

HOSE. Woven. 899,092. Clinton Alvord, Worcester, Mass.

KNIT CAP. Flat. 898,376. Nathan E. Kahn, Woodbine, N. J., assignor to Stephenson & Co., Philadelphia, Pa.

KNIT FABRIC. 898,985. James McNamee, Amsterdam, N. Y.

KNITTED WEB. Ribbed. 899,439. Robert W. Scott, Leeds Point, N. J.

LOOM DOBBY. 897,568. Eugene H. Ballou, Pawtucket, R. I., assignor of one-half to Lorraine Mfg. Co., Pawtucket, R. I.

LOOMS. Filling-end Holder for Weft-replenishing. 897,426. Melvin L. Stone, Lewiston, Me., assignor to Draper Co., Hopedale, Mass.

LOOMS. Filling-end Holder for Weft-replenishing. 897,427. Melvin L. Stone, Lewiston, Me., assignor to Draper Co., Hopedale, Mass.

LOOMS Filling-end Holder for Weft-replenishing. 897,357. John C. Edwards, Brookline, Mass., assignor to Draper Co., Hopedale, Mass.

LOOM for the Manufacture of Tufted or Pile Fabrics. 897,528. Thomas Greenwood, Wolverley, near Kidderminster, England.

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LOOM Harness Mechanism. 897,549. David Lindsay, Paterson, N. J.

LOOMS. Extension Roll for Silk and Other. 898,270. Carl Schneider, Jersey City Heights, N. J.

LOOM Let-off Mechanism. 899,183. John Nazarian, Syracuse, N. Y.

LOOMS. Pile-wire Supporter for. 898,928. Frederick W. Rochelle, Philadelphia, Pa.

LOOMS. Selvage-forming Mechanism for Short-weft. 897,263. Frederick E. Arrouquier, Westbrook, Me.

LOOMS. Shuttle-feeler for Filling Replenishing. Alonzo E. Rhoades, Hopedale, Mass., assignor to Draper Co., Hopedale, Mass.

LOOM-SHUTTLE Tension Device. 898,102. Jules E. Hauvette, Clermont-Ferrand, France.

LOOM Thread-parting Mechanism. 897,404. Alonzo E. Rhoades, Hopedale, Mass., assignor to Draper Co., Hopedale, Mass.

LOOM Warp Stop Motion. 898,358. Wilhelm Gross, Fall River, Mass.

WOOL. Apparatus for Extracting Grease and Potash from. 899,440. Frank Shuman, Philadelphia, Pa.

WOOL. Extracting Grease and Potash Salts from. 899,339. Frank Shuman, Philadelphia, Pa.

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"Milan." Spool cotton, sewing cotton and thread. The American Thread Co., Jersey City, N. J.

"Cotton Belt." Cotton sheetings. Indiana Cotton Mills, Cannelton, Ind.

"A 1." Cotton sheetings. Indiana Cotton Mills, Cannelton, Ind.

"Moravin." Dress goods in the piece. Frank H. Hayes, New York.

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"Cactus C." Cotton piece goods. Norton Pratt Co., Memphis, Tenn.

"Directoire." Satins and dress silks. M. C. Migel & Co., New York.

"Arbeco." Tapestries, draperies. Rosenheim Bros. Co., Philadelphia, Pa.

"Totem." Cotton piece goods. Tootle-Campbell Dry Goods Co., St. Joseph, Mo.

"Issaquena." Hosiery. Oconee Knitting Mills, Walhalla, S. C.

"Burson." Hosiery. Burson Knitting Co., Rockford, Ill.

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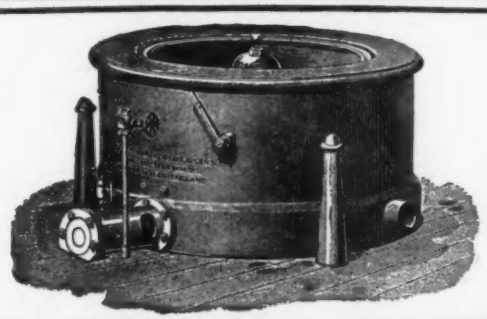

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——See Steam Boilers.

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——See Napping Machines.

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Dye Tubs.
——See Tanks, Tubs and Vats.

Dyestuffs and Chemicals.
American Dyewood Co.
Badische Co.
Berlin Aniline Works.
Bischoff & Co.
Bosson & Lane.
Cassella Color Co.
Chemische Aniline Works.
Danker & Marston.
Kalle & Co.
Ford, J. B., Co.
Geisenheimer & Co.
Johnson, Chas. A., & Co.
Klipstein, A., & Co.
Leyland, Thos., & Co.
Metz, H. A., & Co.
Roessler & Hasslacher Chemical Co.
Sykes, Walter F., & Co.
Thayer, Ed. M., & Co.

Dynamos.
——See Electric Lighting.

Edgings.
——See Tapes, Braids and Edgings.

Electrical Construction.
Crocker-Wheeler Co.
General Electric Co.
Sturtevant, B. F., Company.
Westinghouse Electric & Mfg. Co.

Electrical Heating Devices.
Crocker-Wheeler Co.

Electric Driven Pumps.
Dean Bros. Steam Pump Works.

Electric Fans.
American Blower Co.
Buffalo Forge Co.
Crocker-Wheeler Co.
General Electric Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Electric Hoists.
Crocker-Wheeler Co.

Electric Lighting.
American Blower Co.
Buffalo Forge Co.
Crocker-Wheeler Co.
General Electric Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Electric Motors.
——See Motors (Electric).

Elevators.
Salem Elevator Works.

Embossing Machines.
Cameron Machine Co.

Employees' Time Recorders.
Pettes & Randall Co.

Engine Repairs.
Fishkill Landing Machine Co.

Exhaust Heads.
Buffalo Forge Co.
Sturtevant, B. F., Co.
Power Specialty Co.

Fans—Exhaust and Ventilating.
——See Ventilating Apparatus.

Feed Water Heaters.
Scaife, W. B., & Sons.

Feed Water Pumps.
Dean Bros. Steam Pump Works.
Goulds Mfg. Co.

Feed Water Purifiers.
Dodge Mfg. Co.
Scaife, W. B., & Sons.

Feeds.
——See Automatic Feeds.

Feed Water Regulators.
Berry Engineering Co.

Felt Hardeners.
Farrel Foundry and Machine Co.

Felting Machinery.
Farrel Foundry and Machine Co.

Filters.
Hungerford & Terry.
Norwood Engineering Co.
Scaife, W. B., & Sons.

Finishing Machinery.
——See Dyeing, Drying, Bleaching and Finishing.

Fire Brick.
Borgner, Cyrus, Co.

Fire Extinguishers.
Badger, E. B., & Sons Co.

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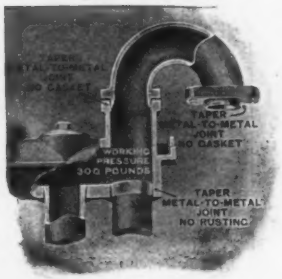

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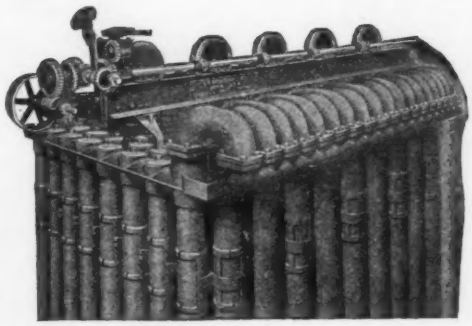
with all Joints

Metal-to-Metal is the Sturtevant



Ask for our New Bulletin No. 102.

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General Office and Works, Hyde Park, Mass.

NEW YORK PHILADELPHIA CHICAGO CINCINNATI LONDON

Designers and Builders of Heating, Ventilating, Drying and Mechanical Draft Apparatus; Fan Blowers and Exhausters; Rotary Blowers and Exhausters; Steam Engines and Electric Motors; Pneumatic Separators, Fuel Economizers, Forges, Exhaust Heads, Steam Traps, Steam Turbines, etc. 689

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Eureka Fire Hose Co.

Fire Hydrants.
Norwood Engineering Co.

Fire Insurance.
Home Insurance Co.

Fire Proof Doors and Windows.
Badger, E. B., & Sons Co.

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Fairbairn-Lawson-Combes-Barbour, Ltd.

Fluted Rolls.
Hood, R. H., Company.
Leigh, Evan A.
Jefferson, Edward & Brother.
Riley, C. E., Company.
Thurston, A. G., & Son.

Flyers.
Bodden, Wm., & Son, Ltd.
Calder Machine Works.
Hopkins Machine Works.
Jefferson, Edward & Brother.
Leigh, Evan A.
Textile Machinery Co.

Fly Wheels.
Dodge Mfg. Co.

Forges.
Sturtevant, B. F., Co.

Friction Clutches.
—See Clutches.

Friction Cones.
Evans, G. Frank.

Friction Rings (Cork Insert).
National Brake & Clutch Co.

Fuel Economizers.
Buffalo Forge Co.
Sturtevant, B. F., Co.

Fulling Mills for Woolen Goods.
Hopkins Machine Works.
Hunter, Jas., Machine Co.
Kenyon, D. R., & Son.

Furnaces (Automatic Smokeless).
Murphy Iron Works.

Garnetts.
Leigh, Evan A.
Smith & Furbush Machine Co.

Gas Blowers and Exhausters.
American Blower Co.
Sturtevant, B. F., Co.

Gas Engines.
Jones, Lewis.
Olney & Warrin.

Gaskets (Superheated Steam).
Power Specialty Co.

Gassing Machines.
Stubbs, Joseph.

Gauges.
Crosby Steam Gage & Valve Co.
Walworth Manufacturing Co.

Gears.
Dodge Mfg. Co.
Farrel Foundry and Machine Co.
New Process Raw Hide Co.

Gear Cutting.
Farrel Foundry and Machine Co.

Gear Cutting Machine.
Whiton, The D. E., Co.

Generating Sets.
American Blower Co.
Buffalo Forge Co.
Crocker-Wheeler Co.
Sturtevant, B. F., Co.

Geyser Water Heater.
Sargent's Sons, C. G., Corp.

Greases.
N. Y. & N. J. Lubricant Co.

Heating.
—See Ventilating Apparatus.

Heddles.
Howard Bros. Mfg. Co.
Stoddard, Haserick, Richards & Co.

Hoisting Apparatus.
Economy Engineering Co.

Hosiery Boards.
Pearson, J. T.
Philadelphia Drying Machinery Co.

Hosiery Labels.
Kaumagraph Company.

Humidifying Apparatus.
American Moistening Co.
Carrier Air Conditioning Co. of America.
Cramer, Stuart W.
Parks, G. M., Co.

Hydraulic Rams.
Power Specialty Co.
Walworth Mfg. Co.

Hydro Extractors.
American Laundry Mchy. Mfg. Co.
American Tool & Machine Co.
Broadbent, Thomas, & Sons.
Dienelt & Eisenhardt, Inc.
Riley, C. E., Company.
Stoddard, Haserick, Richards & Co.
Textile Finishing Machinery Co.
Tolhurst Machine Works.

Insulating and Braiding Silks.
Sauquoit Silk Mfg. Co.

Insurance (Casualty, Fire and for Loss of Profits.)
Home Insurance Co.

Investments.
Cross Creek Coal Co.

Ironing Machines for Knit Goods.
American Laundry Machinery Mfg. Co.
Consolidated H. S. & L. M. Company.

Jacquards.
Halton's, Thomas, Sons.

Knit Goods, Edgings, Trimmings, Etc.
Chapin, Geo. W.
Charles, W. B.
Cheney Bros.
Friedberger-Aaron Mfg. Co.
Krout & Fite Mfg. Co.
Weimar Bros.

Knit Goods, Finishing Machines Crochet, Etc.
American Laundry Machinery Mfg. Co.
Consolidated H. S. & L. M. Company.
Merrow Machine Co., The.
Nye & Tredick Co.
Robinhold Machine Co.
Scott & Williams.
Union Special Machine Co.
Willcox & Gibbs Sewing Machine Co.

Knitting Machine Cylinders.
Paxton & O'Neill.
Stafford & Holt.

Knitting Machinery.
Boss Knitting Machine Co.
Brinton, H., & Co.
Claes & Flentje.
Cooper, Chas.
Crane Mfg. Co.
Dubied, Edouard, & Co.
Excelsior Knitting Machine Mfg. Co.
Gormly, Robt. W., & Co.
Grosser Knitting Machine Co.
Hemphill Mfg. Co.
Huettig, Hugo.
Jenckes, E., Mfg. Co.
Jones, Lewis.
Lamb Knitting Mach. Mfg. Co.
Leighton Machine Co.
Mayo, Geo. D., Knitting Machine Co
Mayo Knitting Machine & Needle Co
National Automatic Knitter Co.
Nye & Tredick Co.
Paxton & O'Neill.
Scott & Williams.
Stafford & Holt.
Standard Machine Co.
Taylor, James.
Tompkins Bros. Co.
Walther, Otto.
Wildman Mfg. Co.

Knitting Needles and Supplies.
Breedon's, Wm., Son.
Brinton, H., & Co.
Continental Latch Needle Company.
Cooper, Chas.
Corey, Wm., Co.
Crane Mfg. Co.
Dodge Needle Co.
Excelsior Needle Co.
Grosser Knitting Machine Co.
Ives, L. T., Co.
Lamb Knitting Machine Mfg. Co.
Keystone Latch Needle Co.
Mayo Knitting Machine & Needle Co.
Wardwell Needle Co.

Lamps, Incandescent.
General Electric Co.
Westinghouse Electric & Mfg. Co.

Loom Pickers.
Barlow, John W., Co.

Looms.
Crompton & Knowles Loom Works.
Draper Company.
Kilburn, Lincoln & Co.
Leigh, Evan A.
Lowell Machine Shop.
Stafford Co., The.
Mason Machine Works.
Stoddard, Haserick, Richards & Co.
Whitin Machine Works.

Loopers.
Beattie Machine Works.
Hepworth, John W., & Co.
Leighton Machine Co.

Lubricants.
Borne, Scrymser Co.
Dixon, Jos., Crucible Co.
N. Y. & N. J. Lubricant Co.
Olney & Warrin.
U. S. Mica Co.

Lubricators.
Detroit Lubricator Co.
Walworth Mfg. Co.

Lumpers.
Gerry, George, & Son.
Schofield, Wm., Co.

Machine Designers.
Adams, A. L.
Cameron Machine Co.

Machine Tools.
Am. Tool Works Co.

Machinery Dealers.
Jefferson, Ed., & Bro.
Lamb, J. K., Textile Mach. Co.
Schofield, Geo. L.
Taylor, James.

Machinists.
Adams, A. L.
Calder Machine Works.
Cameron Machine Co.

Machinists' Tools.
Whiton, The D. E., Co.

Mails.
Walder, J.

Magnesia.
Norristown Magnesia & Asbestos Co.

Marking Pots.
Bradley, A. J.

Measuring and Folding Machines.
Curtis & Marble Machine Co.
Elliott & Hall.

Mechanical Draft.
American Blower Co.
Buffalo Forge Co.

Mechanical Draughtsmen.
Sturtevant, B. F., Co.
Cameron Machine Co.

Mechanical Engineers.
American Blower Co.
Buffalo Forge Co.
Dodge Mfg. Co.
Philadelphia Drying Machinery Co.
Sturtevant, B. F., Co.

Mechanical Stokers.
Murphy Iron Works.

Mercerizers.
Globe Dye Works Co.
Home Bleach & Dye Works.
Lorimer, Wm. H., Sons Co.

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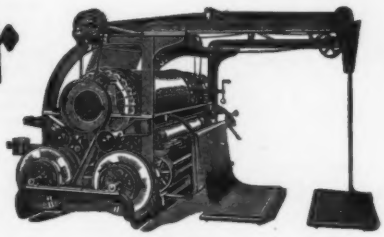
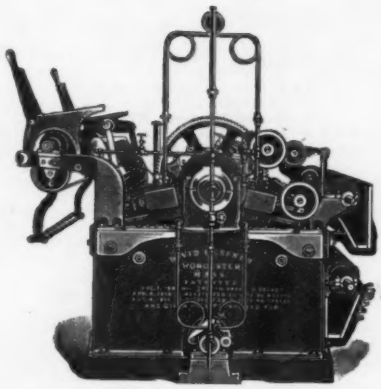
David Gessner

Worcester, Mass.





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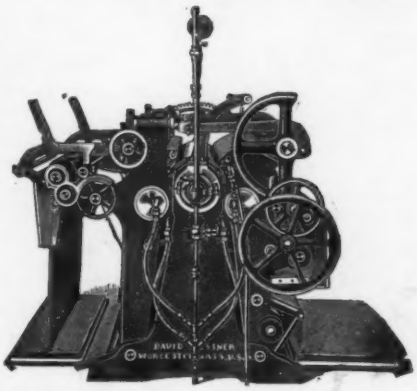
Napping Machines and Presses a Specialty



Mercerizing Machinery.
Butterworth, H. W., & Sons.
Klauder-Weldon Dyeing Machine Co.
Schwartz, L. H. A., & Co.
Smith, Drum & Co.
Textile Finishing Machinery Co.

Metallic Fire-proof Window Frames and Sashes.
Badger, E. B., & Sons Co.

Metallic Packing.
Power Specialty Co.

Mill Architects.
—See Architects and Mill Engineers.

Mill Builders and Engineers.
Gilbreth, Frank B.
Ferguson, John W.

Mill Supplies.
American Supply Co.
Bamford & Smith.
Buckley's, Benjamin, Sons.
Burnham, E. E., & Co.
Crosby Steam Gage and Valve Co.
Easton-Burnham Co.
Eureka Fire Hose Co.
Jefferson, Ed., & Bro.
Lane, W. T., & Bro.
Leigh, Evan A.
Murphy, E. W., & Co.
N. Y. & N. J. Lubricant Co.
Oiney & Warrin.
Philadelphia Drying Machinery Co.
Pratt, R. C.
Riley, C. E., Company.
Richardson Bros.
Shaw, Victor, Ring Traveler Co.
Stephenson Mfg. Co.
Stoddard, Haserick, Richards & Co.
Thurston, A. G., & Son.
Vandegrift, Elias T.
Walworth Manufacturing Co.

Motors (Electric).
Buffalo Forge Co.
Crocker-Wheeler Co.
General Electric Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Napping Machinery.
Birch Bros., Somerville Machine Wks.
Curtis & Marble Machine Co.
Gessner, David.
Jones, Lewis.
Leigh, Evan A.

Noils (Silk).
Malcolm Mills Co.
Ryle, Wm., & Co.

Non-Fluid Oils.
N. Y. & N. J. Lubricant Co.

Oil Cups.
Walworth Manufacturing Co.

Oils.
Borne, Scrymser Co.
Burckhardt & Co.
Harding & Fancourt.
Murphy, E. W., & Co.
New York & New Jersey Lubricant Co.
Stephenson Mfg. Co.
Vera Chemical Co.

Oil Stencil and Press Board Paper.
Bradley, A. J.

Overseaming Machines.
Merrow Machine Co.
Willcox & Gibbs Sewing Machine Co.

Packings (Metallic).
Power Specialty Co.

Packings (Rod and Sheet).
Boston Belting Co.

Paints (Wood Preserving).
Carbolineum Co.

Pantagraphs for Mill Engraving.
Johnson, C. A., & Co.

Paper.
Merwin Paper Co.
Richardson Bros.

Paper Boards.
Merwin Paper Co.

Patent Solicitors.
Crosby & Gregory.
Howson & Howson.
Industrial Law League Inc.
Pearson, Gardner.

Perforated Metals.
Hopkins Machine Works.

Peroxide of Sodium.
Roessler & Hasslacher Chemical Co.

Pinking Machines.
Oswego Machine Works.

Pipes and Fittings.
Scaife, W. B., & Sons.
Walworth Manufacturing Co.

Pneumatic Conveying.
—See Ventilating.

Portable Hoists.
Economy Engineering Co.

Power Transmission Machinery.
Almond, T. W., Mfg. Co.
American Mfg. Co.
American Pulley Co.
Cell Drier Machine Co.
Cresson, Geo. V., Company.
Dodge Mfg. Co.
Evans, G. Frank.
Farrel Foundry and Machine Co.
Hunter, Jas., Machine Co.
Kilburn, Lincoln & Co.
Link Belt Co.
Oiney & Warrin.
Oneida Steel Pulley Co.
Philadelphia Drying Machinery Co.
Plymouth Cordage Co.
Reeves Pulley Co.
Saginaw Manufacturing Co.
Schofield, Wm., Co.
Sellers, William, & Co.
Textile Finishing Machinery Co.
Tolhurst Machine Works.

Preparatory Machinery (Cotton).
Howard & Bullough Am. Machine Co.
Kitson Machine Co.
Leigh, Evan A.
Riley, C. E., Company.
Saco & Pettee Machine Shops.

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Presses.
Automatic Machine Works.
Boomer & Boschert Press Co.
Butterworth, H. W., & Sons Co.
Curtis & Marble Machine Co.
Gessner, David.
Hart, Charles.
Minnich Machine Works.
Phila. Drying Machinery Co.
Spence & Rideout.
Sullivan Machinery Co.
Textile Finishing Machinery Co.
Woonsocket Machine & Press Co.

Press Papers.
Merwin Paper Co.
Philadelphia Drying Mchy. Co.
Richardson Brothers (Importers and Dealers).

Pressure Regulators.
Crosby Steam Gage & Valve Co.
Walworth Mfg. Co.

Pulley Covering.
Olsen, Chas. E. A.

Pulleys.
—See Power Transmission Machinery.

Pumps.
Buffalo Steam Pump Co.
Dean Bros. Steam Pump Works.
Goulds Mfg. Co.
Philadelphia Drying Machinery Co.
Textile Finishing Machinery Co.

Pump Governors.
Crosby Steam Gage & Valve Co.
Dean Bros. Steam Pump Works.
Walworth Mfg. Co.

Purifying & Filtration Plants.
Dodge Mfg. Co.
Hungerford & Terry.
Norwood Engineering Co.
Scaife, W. B., & Sons.

Quillers.
Foster Machine Co.
Payne, G. W., & Co.
Universal Winding Co.

Rag Pickers.
Schofield, Wm., Co.
Smith & Furbush Machine Co.

Ramie Tops and Noils.
Tierney, Frank A.

Raw Hide Gears.
New Process Raw Hide Co.

Reed and Harness Manufacturers.
American Supply Co.
Nuttall, George.
Stewart & Sons.
Walder, J.

Reducing Valves.
Crosby Steam Gage & Valve Co.
Walworth Mfg. Co.

Regulators (Pressure).
Crosby Steam Gage & Valve Co.
Walworth Mfg. Co.

Ribbon Cutters.
Cameron Machine Co.

Ribbons.
Cheney Bros.

Ring Travelers.
DeHaven Mfg. Co.
Shaw, Victor, Ring Traveler Co.

Roofing.
Barrett Mfg. Co.
Standard Paint Co.

Roller Leather.
Jefferson, Edward & Brother.

Roll Coverers.
Burnham, E. E., & Co.

Rolls (Rubber Covered).
American Wringer Co.

Rope.
American Mfg. Co.
Dodge Mfg. Co.
Plymouth Cordage Co.

Rope Transmission.
American Mfg. Co.
Cresson, Geo. V., Company.
Dodge Mfg. Co.
Plymouth Cordage Co.

Roving Cans.
Hill, James, Mfg. Co.
Standard Fibre Co.

Rubber Rolls.
Boston Belting Co.

Ruberoid Roofing.
Standard Paint Co.

Sash Cord Braiders.
Mason Mfg. Co.

Scallop Machines.
Merrow Machine Co.

Schools.
American School of Correspondence.
International Correspondence Schools.
Lowell Textile School.
New Bedford Textile School.
Philadelphia Textile School.

Secondhand Machinery.
—See Mchry. Dealers, also classified Ads.

Separators (Yarn).
Draper Co., The.

Sewing Machines and Supplies.
Arlington Mch. Wks. (Arthur Birch, prop.)
Birch Bros., Somerville Machine Wks.
Curtis & Marble Machine Co.
Dinsmore Mfg. Co.
Fales, L. F.
Standard Sewing Machine Co.
Textile Finishing Machinery Co.
Union Special Machine Co.
Willcox & Gibbs Sewing Machine Co.

Shafting, Hangers, Etc.
—See Power Transmission Machinery.

Shearing Machinery.
—See Dyeing, Drying, Bleaching and Finishing.

Sheet Metal Work.
Scaife, W. B., & Sons.

Shell Rolls.
Thurston, A. G., & Son.

Shoddies.
—See Wool Shoddies.

Shuttles.
—See Bobbins, Spools, Shuttles, Etc.

Silk Machinery.
Arlington Mch. Wks. (Arthur Birch, prop.)
Butterworth, H. W., Sons Co.
Leigh, Evan A.
Mason Machine Works.
Stoddard, Haserick, Richards & Co.
Textile Finishing Machinery Co.

Silk Mill Supplies.
Hall, I. A., & Co.

Silk Noils.
Fawcett, Hughes.

Singe Plates.
Arlington Mch. Wks. (Arthur Birch, prop.)
Butterworth, H. W., Sons Co.
Taunton, New Bedford Copper Co.
Textile Finishing Machinery Co.

Singeing Machines.
Arlington Mch. Wks. (Arthur Birch, prop.)
Automatic Machine Works.
Butterworth, H. W., Sons Co.
Curtis & Marble Machine Co.
Leigh, Evan A.
Philadelphia Drying Machinery Co.
Smith, Drum & Co.
Stubbs, Joseph.
Textile Finishing Machinery Co.

Sizing, Starch and Gums.
American Diamalt Co.
Arabol Mfg. Co.
Corn Products Refining Co.
Danker & Marston.
New Brunswick Chemical Co.
Stein, Hirsch & Co.
Vera Chemical Co.

Skylights.
Drouve, G., Co.
Van Noorden, E., Co.

Slashers.
Leigh, Evan A.
Lowell Machine Shop.
Riley, C. E., Company.

Soaps.
Dobbins Soap Mfg. Co.
Zurn, O. F., Co.

Spindles.
Bamford & Smith.
Bodden, Wm. & Son, Ltd.
Buckley's, Benjamin, Sons.
Calder Machine Works.
Draper Company.
Easton-Burnham Co.
Hopkins Machine Works.
Jefferson, Edward & Brother.
Leigh, Evan A.
Riley, C. E., Company.
Stoddard, Haserick, Richards & Co.
Vandegrift, Elias T.

Spindle Tubes.
Bamford & Smith.
Calder Machine Works.
Riley, C. E., Company.
Stoddard, Haserick, Richards & Co.
Vandegrift, Elias T.

Spinning Rings.
Draper Company.
Howard & Bullough American Machine Co.
Whitinsville Spinning Ring Co.

Spinning Tubes.
Buckley's, Benjamin, Sons.
Jefferson, Edward & Brother.

Spools.
—See Bobbins, Spools, Shuttles, Etc.

Spoolers.
Draper Company.
Easton & Burnham Machine Co.
Lindsay, Hyde & Co.
Lowell Machine Shop.
Payne, George W., & Co.

Stacks.
Scaife, W. B., & Sons.

Steam Boilers.
Scaife, W. B., & Sons.

Steam Boiler Insurance.
Hartford Steam Boiler Inspection & Insurance Co.

Steam Engines.
American Blower Co.
Arlington Mch. Wks. (Arthur Birch, prop.)
Buffalo Forge Co.
Fishkill Landing Machine Co.
Olney & Warrin.
Providence Engineering Works.
Sturtevant, B. F., Co.
Textile Finishing Machinery Co.

Steam Heating.
American Blower Co.

Steam Jacket Kettles.
Badger, E. B., & Sons Co.

Steam Pipe and Boiler Covering.
Norristown Magnesia & Asbestos Co.

Steam Pumps.
Dean Bros. Steam Pump Works.
Goulds Manufacturing Co., The.
Olney & Warrin.
Walworth Mfg. Co.

Steam Specialties.
Berry Engineering Co.
Buffalo Forge Co.
Butterworth, H. W., Sons Co.
Crosby Steam Gage & Valve Co.
Sargent's Sons, C. G., Corp.
Sturtevant, B. F., Co.
Textile Finishing Machinery Co.
Walworth Manufacturing Co.

Steam Traps.
American Blower Co.
Buffalo Forge Co.
Sturtevant, B. F., Co.
Walworth Mfg. Co.

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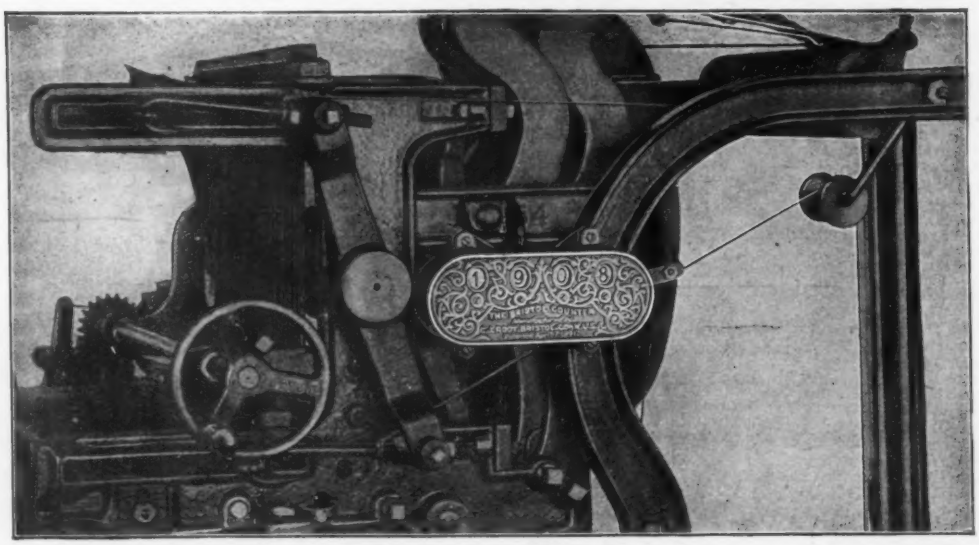
The Bristol Counter

Automatically Registers Production

on Looms, Dryers, Scutchers, Winders, Folding, Printing Machines, Braiders, etc.



The illustration shows

The Bristol Counter attached to a Crompton & Knowles Towel Loom arranged to count the number of towels woven.

It can also be arranged to count the number of yards or picks woven. This method of recording production affords a basis of paying operatives that is equitable to both employer and employee.

Different styles can be adapted to various purposes and requirements. The counter can be actuated either by cone or rotating shaft. We would be glad to hear from you.

The C. J. Root Co., Bristol, Conn.

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I HAVE had a great deal of experience in straightening out troubles in wool card rooms.

I believe I have worked in more wool card rooms than any other man in this country, and it has given me an unusual opportunity for noting all sorts of difficulties and the best way of overcoming them. Sometimes an outsider will quickly detect a point which the man always on the spot may overlook. Sometimes it is not necessary to visit the mills, as I can tell what the trouble is by correspondence. My charges are very reasonable and manufacturers and overseers may address me in confidence.

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Wants, For Sale, Etc.

Rates 15 cents a line per issue when replies are sent in care of TEXTILE WORLD RECORD to be forwarded. If replies go direct to advertiser the rate is 10 cents per line per issue. Count seven words to a line and include side head and address. Cash must accompany the order for these ads. If such ads. are "displayed" the rate is $2.00 per inch single column each time. The publishers reserve the right to reject any advertisement.

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A salesman, now employed by a prominent Manufacturer of textile machinery, and having an extensive acquaintance with the Treasurers, Agents, and Superintendents of Cotton Mills, wishes to make a change. A first class concern requiring an energetic salesman of proven ability—habits, address and appearance right—will be given every opportunity to investigate. A clean record of over 10 years as salesman. Age 33. Married.

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We want to arrange with a capable and intelligent designer

who is employed either in a city commission house or a woolen or worsted mill, to analyze samples and lay out the drafts for mill use—with comments and suggestions. The samples will be furnished and the work must be done out of hours and without detriment to employer's interests. Compensation depends on amount of work done, but probably several dollars per week.

Address "Design," care of Textile World Record, Boston, Mass.

POSITION WANTED

as superintendent of a mill making Cotton Hosiery by a man with 25 years' experience.

Is thoroughly practical and understands the business in all of its branches. Address "Mill Manager," care of Textile World Record, Boston, Mass.

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Cost $3350. Sell $1500.
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Many lines are being exploited easily on the mail order plan—hosiery, rugs, curtains, dry goods (mill ends), braids, tapes, washing machines, stoves, ranges, bicycles, etc. Manufacturers all over the country find that they can build up a profitable mail order business without affecting their standing with the jobbers.

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Equipped with 24 Fancy Knowles Looms, Dyeing and Finishing Machinery for manufacturing fine Worsted Goods. Steam and water power. Mill also contains two sets Woolen Cards with Spinning, etc.

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Boss Knitter Wanted.

WANTED: A Foreman for the Knitting Department. Must be efficient on Standard Machines. State experience and give references and wages wanted. Apply to CHATTANOOGA KNITTING MILLS, Chattanooga, Tenn.

Hosiery Office Manager Wanted

A man thoroughly familiar with hosiery business to take charge of office of large hosiery mill. Must be a thorough bookkeeper. A first class position for right man. Stock or interest in one of the largest institutions can be acquired by the right party if so desired. Address "N. C. P." Textile World Record, Boston, Mass.

FOREIGN AGENCY WANTED.

An important knitting machinery concern desires the exclusive agency for a full automatic circular knitting machine of the latest system for the production of seamless hosiery. Address D. N. 555, Rudolph Mosse, Dresden, Germany.

WE WANT AGENTS

Salesmen to sell Warren's Pulley Cover and other specialties in every city in the U. S. We have made this specialty 10 years. Customers re-order and say, "It reduces our belt troubles 75%." Liberal commission to men who can sell things—not mere order takers. In writing state experience and line now selling, if any **The Warren Co., Inc., 493 Wells St., Chicago, Ill.**

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up-to-date machinery, or will employ a practical manager who will invest $5000. Address O. W., care Textile World Record, Boston, Mass.

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A foreman in spun silk mill for masurating and chemical boil off.

Also a foreman in circular silk combing (dressing.)

Also a foreman in silk preparing, must understand intersecting gills and porcupines and spreading.

Also wanted a man who understands gassing and silk cleaning machines. ¶**Also an assistant superintendent** who understands spun silk manufacturing from spreading to the finished yarn.

Address "F. E. D.," care Textile World, Boston, Mass.

WANTED BOSS CARDER

thoroughly familiar with lappers, pickers, cards and cotton machinery, and all kinds of cotton stocks and capable to manage help as foreman in cotton mill. No spinning. State age, full experience, salary expected, etc. Address "Excelsior," care Textile World Record, Boston, Mass.

Narrow Fabrics—Position Wanted

by a man with 18 years experience, as Agent or Superintendent with a concern manufacturing Narrow Fabrics, either elastic or non-elastic webbings. Is thoroughly practical and understands the business in all its branches. Address "Webbings," care Textile World Record, Boston, Mass.

How often you have looked at the Superintendent or Agent and wished you had his authority—and salary. But **wishing** didn't get the position for him, and it will not get a similar one for you. **There must be something behind the desire**—something stronger—something which will not only help you to **get** the position, but will enable you to **hold it** when obtained.

Good, sound, practical **knowledge** is what you need. It's what your "boss" has—its what **you** can have by devoting a few of your spare moments each day to the study of the

CYCLOPEDIA OF
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The most comprehensive and authoritative reference work HOME STUDY instructor yet published that covers every process connected with textile work, from the preparation of the raw material to the finishing of the most delicate fabrics. The 3 000, 7x10 inch pages are crammed with the practical knowledge of a staff of practical, technical experts. It also contains 2,000 illustrations, diagrams, formulas, plates, etc., to simplify and thoroughly explain the text, and is carefully indexed for ready reference.

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Address.....

Occupation.....

Employer.....

Textile World Record 10-08.

Situations Wanted.

The following advertisements are a portion of those of superintendents and overseers, of whom full particulars are on file at this office. Manufactu ers who may be in need of such men may address them in care of Textile World Record, Boston, or state their requirements directly, and the addresses of suitable men will be furnished without charge.

Mr. C. T. Donlevy, a practical mill overseer and superintendent, who has a wide acquaintance with mill men, gives special attention to this department. He would be pleased to hear from any of his friends who may be interested. Address Textile World Record, 144 Congress St., Boston, Mass.

COTTON SUPERINTENDENTS.

Superintendent or Agent of cotton mill; position wanted by a man 43 years of age, married, American; has worked on all kinds of cotton and worsted goods, and is familiar with Draper, Crompton & Knowles, Lowell, Whitin, Mason, Kilbourn and Lincoln looms; good references. 3669, Textile World Record,, Boston, Mass.

Supt., Asst. Supt. or overseer of carding; position wanted by a man 39 years of age, married, American; is experienced on all kinds of cotton colored goods, long or short stock, also on bleached stock; is familiar with Colvin, Whitin and Crompton looms, and all makes of carding and spinning machinery; good references. 3585, Textile World Record, Boston, Mass.

Agent or Superintendent of a cotton mill; position wanted by a man, 40 years of age, American, married; familiar with fancy, colored and plain goods of all kinds; familiar with all kinds of cotton machinery; has been overseer for a number of years in first class mill; could take a position at short notice; good reference. 3814, Textile World Record, Boston, Mass.

Manager, Superintendent, buyer or cost accountant in a cotton mill; position wanted by a man 30 years of age, American, single; has had a practical training in the manufacturing of cotton goods; good references. 3834, Textile World Record, Boston, Mass.

Agent or Superintendent of a cotton mill; worked on all classes of cotton goods, white and colored, plain and fancy; familiar with all makes of cotton machinery used in the above goods; prefers New England or New York State; 45 years of age, married; good reference. 4603, Textile World Record, Boston, Mass.

Superintendent or assistant superintendent of a cotton mill; 44 years of age, married; has worked on ginghams, shirtings, fancy dress goods, turkey red, damask, cotton warp and fancy yarns for woolen mills; 23 years of practical experience and is familiar with all kinds of machinery used in the manufacture of the above goods; will not go West or South; good reference. 4501, Textile World Record, Boston, Mass.

Superintendent of a Cotton Mill or position as overseer of mule and ring spinning, spooling, warping and twisting; worked on prints, hosiery, sale yarns, sheetings and dress goods; familiar with all modern makes of machinery; good reference; 45 years of age, married. 4694, Textile World Record, Boston, Mass.

Assistant Superintendent in a cotton mill or position as overseer of carding or spinning. Worked on all kinds of cotton goods, wool mixes, ginghams, tickings, denims, linings, etc. Familiar with all makes of cotton machinery. Has had a number of years experience in different departments in mills, machine shops, engineering, weaving, carding and spinning. Good reference. Will go any place for a good position. 4609, Textile World Record, Boston, Mass.

Superintendent of a Cotton Mill. Worked on drills, ducks, sateens, lenos, American, Sea Island and Egyptian cottons. Familiar with all makes of American and English machinery. 40 years of age, married. Good reference. 4597, Textile World Record, Boston, Mass.

Superintendent of a cotton or worsted mill or boss weaver in a large mill; worked on all kinds of cotton and worsted dress goods and men's wear, novelties of all kinds; practical loom fixer, designer, etc.; familiar with Crompton & Knowles box looms, dobbies, jacquards, etc.; also Bridesburg and Woods looms; 42 years of age, married; good reference. 4145, Textile World Record, Boston, Mass.

WOOLEN SUPERINTENDENTS.

Superintendent or Manager of woolen mill; position wanted by a man 47 years of age, married, Scotch; is experienced on worsteds, fancy cassimeres, homespuns, meltons, thibets, kerseys, overcoatings, cheviots and dress goods; is familiar with all kinds of woolen machinery; good references 3619, Textile World Record, Boston, Mass.

Superintendent of woolen mill; was in business for himself for years; he is now open for a position; age 52, married; first class references from commission houses. 3227, Textile World Record, Boston, Mass.

Worsted Superintendent or overseer of combing, spinning and twisting; worked on mohair, alpaca, all foreign and domestic wools; familiar with all kinds of machinery; first class references; age 45, married. 3248, Textile World Record, Boston, Mass.

Superintendent or assistant of a woolen or worsted yarn mill; worked on fancy and piece dye worsteds, men's wear, thibets and overcoatings; has a good knowledge of blending stock, also a good knowledge of designing; familiar with all makes of woolen and worsted machinery, American and foreign; 26 years of age, married; good reference. 4593, Textile World Record, Boston, Mass.

Manager, superintendent or designer; age 30, English, married; experienced in England and in this country; mohairs, all classes of worsted suitings, plain and fancy dress goods. 3184, Textile World Record, Boston, Mass.

Manager, Agent, Supt. or supt. and designer; position wanted by a man 57 years of age, English, married; has worked on all classes of woolen and worsted goods in fancy and piece dyes, from the finest to the coarsest goods; familiar with all kinds of machinery; has exceptionally good references; could take a position at once. 3705, Textile World Record Boston, Mass.

Superintendent or Assistant Superintendent of a woolen or knitting mill. Has manufactured woolen goods, blankets, flannels, shirtings, hosiery and yarns. Familiar with Crompton & Knowles looms, D. & F. carding and spinning machinery and Branson knitters. Will not go to Maine, New Hampshire, Vermont or Canada. 32 years of age, married. Good reference. 4686, Textile World Record, Boston, Mass.

Assistant Superintendent in a woolen mill or an office position wanted by a man 31 years of age, single. Has had experience on low grade kerseys, cheviots, broad cloths, meltons and fancy cassimeres. Would prefer a position in New England and would work for reasonable wages if there was a chance for advancement. Good reference. 4543, Textile World Record, Boston, Mass.

Agent or Superintendent of a woolen or worsted mill. Worked on all classes of worsted and woolen goods; can furnish first class reference. 50 years of age, widower. 4681, Textile World Record, Boston, Mass.

Superintendent of Woolen Mill. Worked on cassimeres, unions, jeans and woolens; understands all machinery and is a first class man on cards and jacks; good reference, 50 years of age, married. 4113 Textile World Record, Boston, Mass.

Superintendent or Manager of a woolen mill. Worked on cotton carded dress goods, men's suitings, worsted men's wear and worsted dress goods. Understands all makes of machinery. Will not go West, South or Canada. Good reference. 30 years of age, married. 4652, Textile World Record, Boston, Mass.

DESIGNERS.

Designer or assistant superintendent; worked on cotton warp flannel coverts, plain and fancy cotton warp, and all wool dress goods; first class references. 3244, Textile World Record, Boston, Mass.

Designer on any class of dress goods, waistings, mantle cloths, fine shirtings, etc. 3203, Textile World Record, Boston, Mass.

Designer or superintendent; ginghams, crepe, jacquards, cycle tires, filter cloth, vesting cloth, etc.; good recommendations; middle aged man, English, married. 3169, Textile World Record, Boston, Mass.

Designer; worked on all kinds of woolen goods; 35 years of age, married; good reference. 4664, Textile World Record, Boston, Mass.

Designer in Worsted or woolen mill; worked on woolen and worsted goods of all kinds; good reference; will go any place for a position; 26 years of age, single, German. 4601, Textile World Record, Boston, Mass.

Designer on Jacquard Work; 36 years of age, married; worked on brocades, fancy stripes, silk, worsted and cotton goods; could take a position at once; will not go West, South or Canada. 4535, Textile World Record, Boston, Mass.

Designer or Assistant Designer; worked on fancy worsteds, mohair and alpaca linings; 31 years of age, single; good reference. 4644, Textile World Record, Boston, Mass.

Designer or Assistant Designer; worked on fine fancy worsted goods, all grades; 26 years of age, single; good reference. 4634, Textile World Record, Boston, Mass.

SUPERINTENDENTS AND DESIGNERS.

Superintendent and Designer; position wanted by a man 30 years of age, English; has worked on all kinds of fancy cotton goods, and is familiar with all kinds of cotton looms; good references. 3682, Textile World Record, Boston, Mass.

Superintendent and Designer, or assistant superintendent; age 34, married; worked on cloths ranging from all cotton to all wool and worsteds, such as cotton worsteds, jeans, army cloths, kerseys, etc.; excellent references. 3148, Textile World Record, Boston, Mass.

Superintendent and Designer, or assistant superintendent or boss weaver in a woolen mill; position wanted by a man 36 years of age, American, married; worked on all kinds of woolen and worsted goods, also blankets; understands all kinds of machinery; has worked in all departments of a mill; good references. 3845, Textile World Record, Boston, Mass.

Superintendent and Designer; position wanted by a man 38 years of age; married; worked on men's wear fancy worsteds, cotton worsteds, overcoatings and dress goods; good references. 3056, Textile World Record, Boston, Mass.

Assistant Superintendent and assistant designer; position wanted by a man 27 years of age, German; has worked on fancy cassimeres, overcoatings and dress goods; is familiar with Crompton & Knowles looms; good references. 3681, Textile World Record, Boston, Mass.

Designer, Assistant Superintendent or superintendent in a small woolen or worsted mill; worked on medium and high grade men's wear, woolens and worsteds; woolens as low as 60c. per yard and worsteds as high as $3.00 per yard; understands all makes of machinery; prefers New England; 31 years of age, married; good reference. 4669, Textile World Record, Boston, Mass.

Designer or Superintendent; 31 years of age, English; worked on all kinds of woolen and worsted men's and women's wear; familiar with the English and American looms; good reference. 4556, Textile World Record, Boston, Mass.

Assistant Superintendent or designer in a cotton mill; 34 years of age, American, married; worked on denims, tickings, linings, dress goods, shirtings, cottonades, outings and plaids; familiar with up-to-date machinery used in different departments in a mill; will not go West or Canada; good reference. 4591, Textile World Record, Boston, Mass.

KNITTERS.

Overseer of Knitting on underwear and double rib knitting machines; worked on all kinds of goods made on double rib machines; will not go South; 36 years of age, married, American; good reference. 4151, Textile World Record, Boston, Mass.

Overseer or assistant superintendent of hosiery knitting; have worked on all grades of work from coarse wool to the finest mercerized cotton; familiar with Standard, Acme, Mayo, Hemphill, Scott & Williams and Brinton makes of machines; 35 years of age, married; good reference. 4155, Textile World Record, Boston, Mass.

Superintendent of Knitting, or overseer of large knitting or seaming room; worked on nearly all kinds of knit goods; familiar with Crane's Twist Drill, Tompkins, Nye & Tredick, and several kinds of sewing machines used in a knitting mill; 40 years of age, married; good references; has had 25 years of constant experience in the knitting business. 4178, Textile World Record, Boston, Mass.

Superintendent of a knitting mill, or assistant in large mill; worked on men's and women's ribbed goods and men's flat goods; familiar with all kinds of sewing machines used in knitting mills and clothing factories; Scott & Williams, Wildman, Nye & Tredick, Crane, Esty and Branson knitting machines; 30 years of age, married; will not go to R. I. or N. J.; good reference. 4185, Textile World Record, Boston, Mass.

Superintendent or overseer of knitting; worked on everything from silk to plush; specialty is single thread and plated or wool work; familiar with all makes of both flat and circular machines; 44 years of age, married; good reference. 4181, Textile World Record, Boston, Mass.

Superintendent, boss knitter or fixer; worked on all classes of ladies', misses', half hose; plain, fancy and lace from 84 to 220 needle; cotton, wool, lisle, worsted, mercerized, silk and merino; familiar with Scott & Williams, Jenks, Standard, Mayo, Branson, Hemphill, Boss, Brinton, Hepworth & Beattie loopers; Murphy, International, Union Special, seamers and edgers; National and Lamb sewing machines; 30 years of age, single; good reference. 4153, Textile World Record, Boston, Mass.

Superintendent or boss knitter in large mill; worked on worsted, wool, shoddy, plaited, cotton, lisle, mercerized and silk goods; familiar with Acme, Standard, Victor, Scott & Williams, and several other makes of machinery; also standard ribbers, loopers and sewing machines; 35 years of age, married; good reference. 4168, Textile World Record, Boston, Mass.

Overseer of Latch Needle Knitting; position wanted by a man 27 years of age, single; has worked on almost all grades of stitchers of ladies' and gents' cotton and worsted underwear; familiar with Scott & Williams, Wildman, Snyder, Nye & Tredick, Stafford & Holt and Fisher machines; can take a position at short notice; good references. 3873, Textile World Record, Boston, Mass.

Overseer of Knitting; position wanted by a man 29 years of age, married; worked on fleece lined, balbriggans, mercerized cotton, fancy worsted, wool merino nets, heavy and light weight ribbed work; familiar with Campbell & Clute, Tompkins Bros., Bromley & Crane, latch needle, Scott & Williams, Nye & Tredick, Fisher, and Wildman machines; good references. 3881, Textile World Record, Boston, Mass.

Superintendent or boss knitter; worked on men's fine balbriggan, ladies', men's and children's wool underwear; familiar with all kinds of knitting machinery; 27 years of age, American. 3259, Textile World Record, Boston, Mass.

Overseer of Knitting; 38 years of age; energetic and progressive; wants position on spring needle knitting machines; 22 years' experience on stockinets, elderdowns, jerseys, astrachans, fleeces, bathing suits, athletic garments, underwear etc.; superior on these lines; good reference; married. 4087, Textile World Record, Boston, Mass.

Overseer of Knitting; position wanted by a man 46 years of age; worked on all makes of flat knitting machines, Rashel double ribbed machines and spring needle; worked on sweaters, jackets, gloves, mittens and shawls; good reference. 4570, Textile World Record, Boston, Mass.

SPINNERS.

Overseer of Worsted Spinning and twisting; position wanted by a man, 32 years of age, single, English; worked on all kinds of carpet and hosiery yarn and has been overseer in leading mills in England, Scotland and United States; familiar with all kinds of worsted spinning machinery; good references. 3808, Textile World Record, Boston, Mass.

Overseer of Woolen Spinning; position wanted by married man, 28 years of age; worked on all kinds of wool, cotton and shoddy mix goods on J. & B. mules; good reference; will not go West, South or Canada. 4053, Textile World Record, Boston, Mass.

Overseer of Cotton Mule Spinning; 30 years of age married; worked on plain and fancy goods of all kinds; familiar with the American and English makes of mules; prefers a position in Mass., R. I. or Conn; good reference. 4585, Textile World Record, Boston, Mass.

Overseer of Woolen Spinning or fixing; 41 years of age, married; has worked on all kinds of woolen goods; familiar with the D. & F. and J. & B. machines; prefers N. E. States; has one sewer and one burler in the family; good reference. 4590, Textile World Record, Boston, Mass.

Overseer of Mule or ring spinning; a married man, 45 years of age, English; worked on all kinds of cotton goods and all numbers, both coarse and fine, also hosiery yarns; familiar with all makes of English spinning machinery; will not go South; good reference. 4520, Textile World Record, Boston, Mass.

Overseer of Ring Spinning, spooling, warping and twisting; position wanted by a married man, 28 years of age; worked on suitings, checks, plaids, tickings, awnings, stripes and denims; familiar with Whitin, Mason, Lowell, Fales & Jenks spinning frames, Draper spoolers and warpers, new Whitin spoolers and Fales & Jenks and Whitin twisters; will not go to Penn. or Canada; good reference. 4563, Textile World Record, Boston, Mass.

Overseer of Ring Spinning; worked on white goods and yarns from 8s to 70s warp and filling; familiar with Whitin, Fales & Jenks, Mason, Howard & Bullough and Davis & Furber machines; 26 years of age, married; good reference. 4628, Textile World Record, Boston, Mass.

Overseer of Ring Spinning or second hand; worked on sheetings, shirtings, warp and filling; familiar with the Whitin, Fales & Jenks machines; 31 years of age, married; wife is a spooler; good reference. 4635, Textile World Record, Boston, Mass.

Overseer of Mule Spinning, or mule and ring spinning in a cotton mill; worked on threads, warps, filling, hosiery yarns and counts from 6s to 180s, Egyptian and American cotton; familiar with English and American mules; wants a position in the North; good reference; 40 years of age, married. 4624, Textile World Record, Boston, Mass.

Overseer of Ring Spinning, spooling and warping, or second in large mill. Worked on yarns from 10s to 70s. Whitin, Fales & Jencks and Mason machines. Good reference. 34 years of age, married. 4672, Textile World Record, Boston, Mass.

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The most practical, surest, and quickest way in the world for ambitious textile workers to secure promotion is offered by an institution through whose assistance thousands of men have already advanced to better positions and larger salaries. They have done this in their own homes, in their spare time, and at an insignificant cost. We will cheerfully explain, free of charge, how we can adapt our plan to **YOUR** personal needs and income if you will write us today, stating the position you would like to secure.

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WEAVERS.

Overseer of Woolen Weaving; American, 37 years of age; accustomed to fancy worsteds and woolens, dress goods, etc.; held last position six years; prefers the East. 3397, Textile World Record, Boston, Mass.

Woolen Boss Weaver; worked on worsteds, woolens of all kinds, also dress goods; American, 38 years of age married. 3231, Textile World Record, Boston, Mass.

Overseer of Weaving or designer; lawns, sheetings, twills, sateens, quilts, bedford cords, lappets; a young man, unmarried; good experience and first class recommendation. 3068, Textile World Record, Boston, Mass.

Overseer of Cotton Weaving; position wanted by a man 39 years of age, American, married; worked on all kinds of cotton goods, plain and fancy, on English, Colvin, Mason, Whitin and Draper looms; could take a position at two weeks' notice; first class recommendations. 3735, Textile World Record, Boston, Mass.

Overseer of Weaving; worked on sheetings, twills, sateens and fancies; wants not less than $18 per week. 3157, Textile World Record, Boston, Mass.

Overseer of Weaving; position wanted by a man, American, 45 years of age and married; has worked on dress goods, cloakings, flannels, meltons and unions; is familiar with Crompton & Knowles and Stafford looms; good references. 3494, Textile World Record, Boston, Mass.

Overseer of Cotton Weaving; position wanted by a man, 27 years of age, American, married, with experience on prints, cambrics, sateens, drills, corded goods, etc.; worked on Draper, Whitin, Lowell, Mason and Colvin looms; prefers a position in the East. 3430, Textile World Record, Boston, Mass.

Overseer of Weaving or assistant superintendent; position wanted by a man 48 years of age, married; has worked on all kinds of fancy woolen and worsted goods, wool and cotton and wool and shoddy mixes, and fancy cotton dress goods; can also design; is familiar with Crompton & Knowles looms, Gilbert looms and dobby heads, and Whitin plain and fancy looms; has good references. 3501, Textile World Record, Boston, Mass.

Overseer of Weaving; Englishman, 33 years of age, married; worked on fine lawns, sheetings, sateens and fancies, coarse drills, twills, bicycle cloth, automobile cloth for tires; familiar with Whitin, Crompton, Knowles, Mason, Kilburn & Lincoln and Lowell machines. 3073, Textile World Record, Boston, Mass.

Overseer of Weaving; position wanted by a man 28 years of age, single and Scotch; has worked on wool and worsted and union goods, blankets, shirtings, rugs, etc.; is familiar with Crompton & Knowles, also English looms and dobbies; has good references. 3507, Textile World Record, Boston, Mass.

Overseer of Weaving, drawing in and twisting; position wanted by a man 44 years of age, married, English; has worked on plain twills, sateens, fancy lenos, Jacquard, lappetts, also plush goods; is familiar with Mason, Draper, Whitin and Crompton & Knowles looms; good references. 3590, Textile World Record, Boston, Mass.

Overseer of Woolen Weaving, second hand or loom fixer; worked on worsteds, cassimeres, ladies' dress goods, blankets and cheviots; familiar with the Crompton & Knowles looms; has two workers in the family; could take a position at once and will go any place; 46 years of age, married; good reference. 4620, Textile World Record, Boston, Mass.

Overseer of Woolen Weaving; worked on fancy and cotton worsteds, dress goods and woolens of all kinds; familiar with C. & K. looms; 32 years of age, married; good reference. 4637, Textile World Record, Boston, Mass.

Overseer of Weaving or second hand in a woolen mill; married man, 34 years of age, American; worked on broadcloths, sackings, covert cloths, suitings, kerseys, beavers, rain cloths and bed blankets; familiar with Crompton & Knowles and Davis & Furber looms; prefers a position in New England; good reference. 4554, Textile World Record, Boston, Mass.

CARDERS.

Overseer of Woolen Carding; position wanted by a man 47 years of age, American, married; has handled all kinds of stock, cotton, wool and shoddy mixes on yarns from 1 to 6 run; has been employed for a number of years in leading mills; first class reference. 3815, Textile World Record, Boston, Mass.

Overseer of Woolen or worsted carding; would accept a position as superintendent of a felt mill; understands the business in every detail; worked on all kinds of stock and all makes of cards; first class reference; will go any place for a good position; 45 years of age, American, married. 3470, Textile World Record, Boston, Mass.

Overseer of Carding or spinning in a cotton yarn mill; worked on combed, Egyptian, Sea Island, peeler, Georgia and American cotton; all makes of carding and combing machinery; will not go South or Canada; good reference; 32 years of age, single. 4132, Textile World Record, Boston, Mass.

Overseer of Woolen or worsted carding; worked on all grades of stock; wool, shoddy and cotton mixes; familiar with all makes of carding machinery; will not go West, South, Canada or Pennsylvania; good reference; 36 years of age, married. 4124, Textile World Record, Boston, Mass.

Overseer of Carding or spinning or both; worked on all wool, cotton shoddy and mixes for weaving or knitting; 1 run to 8 run; also hose run for shoddy card rooms; familiar with D. & F., J. & B., Ray and Smith cards; Barker or D. & F. rubs, English mules; 36 years of age, married; good reference. 4136, Textile World Record, Boston, Mass.

Overseer of Carding; worked on all kinds of wool, cotton and shoddy; familiar with all kinds of machinery, D. & F., Cleveland, Lombard, Smith & Furbush and Gaintor; will not go to Maine, Canada, West or South; 42 years of age, married; good reference. 4138, Textile World Record, Boston, Mass.

Overseer of Woolen Carding; 48 years of age, married, American; worked on all kinds of woolen, cotton and shoddy mixed goods; exceptionally good man on low stock; good reference; has had 22 years of experience in the card room. 4530, Textile World Record, Boston, Mass.

Overseer of Woolen Carding; worked on all kinds of goods made from wool, shoddy and cotton mixes; familiar with all makes of cards and Boulette condensers; prefers a position in the New England or New York States; good reference; 50 years of age, married. 4638, Textile World Record, Boston, Mass.

Overseer of Woolen Carding or carding and spinning; worked on all kinds of woolen, cotton and shoddy mixes; familiar with all makes of carding machinery, D. & F., J. & B., and Bancroft mules; could take a position at once; good reference. 4603, Textile World Record, Boston, Mass.

Overseer of Woolen Carding and spinning; worked on fancy cassimeres, tweeds, all grades of woolen goods, made from wool, cotton and shoddy mixes; familiar with Davis & Furber mules and all makes of cards; would accept a position anywhere where there is a healthy climate; 45 years of age, married; good reference. 4615, Textile World Record, Boston, Mass.

Overseer of Woolen Carding; worked on all kinds of woolen goods also cotton ,wool and shoddy mixes; familiar with all makes of carding machinery; will go any place for a good position; good reference; 35 years of age, married. 4606, Textile World Record, Boston, Mass.

Overseer of Cotton Carding. Worked on sheetings and hosiery yarns. Familiar with all makes of carding machinery. 30 years of age, married. Good reference. 4682, Textile World Record, Boston, Mass.

Overseer of Woolen Carding. Worked on all kinds of woolen goods, made from wool, cotton and shoddy mixes. Familiar with all makes of woolen carding machinery. Good reference. 46 years of age, single. 4685, Textile World Record, Boston, Mass.

Overseer of Woolen Carding. 36 years of age, American, married. Worked on all kinds of woolen shoddy and cotton mixed goods. Familiar with the different American makes of carding machinery. Will not go to Penn., West, South or Canada. Good reference. 4577, Textile World Record, Boston, Mass.

FINISHERS

Overseer of Finishing and napping of cotton goods; position wanted by a man 33 years of age, Canadian, married; has worked on oxfords, ginghams, chambrays, dress goods, flannellettes, blankets, domets, etc.; is familiar with all kinds of American, German and English finishing machinery, tenter frames, calenders, stretchers, presses and nappers; good reference. 3772, Textile World Record, Boston, Mass.

Overseer of Cotton Finishing and napping; position wanted by a man 34 years of age, Irish, single; has worked on domets, sheetings, all weights and widths, flannels, blankets, double felts, duckings, drillings and shirtings; familiar with all kinds of finishing machines used in the finishing of these goods; good reference. 3773, Textile World Record, Boston, Mass.

Overseer of Finishing in woolen mill; position wanted by a man 41 years of age, married, American; finished cassimeres, fancy and cotton worsteds, beavers, meltons, dress goods; first class reference; can take position at once. 3706, Textile World Record, Boston, Mass.

Overseer of Cotton Finishing or superintendent of bleach and dye works; position wanted by a man 42 years of age, American, married; has worked on lawns, lenos, shirtings, sateens, flannels, in fact all kinds of cotton goods except back filled goods; familiar with American and English machinery; good references. 3852, Textile World Record, Boston, Mass.

Overseer of Finishing; age 30, American, unmarried, with six years' experience as overseer, wants position in New England; had experience on satinets, unions, and all goods where cotton warp is used, also on nearly all machinery used in making these goods. 3335, Textile World Record, Boston, Mass.

Superintendent of Finishing Works or overseer; position wanted by a man who has a wide experience on cotton goods of all kinds, fast blacks and sateens; 49 years of age, married, with good reference from past employer; will go any place for a good position; American. 3461, Textile World Record, Boston, Mass.

Overseer of Finishing; position wanted by a man 40 years of age, married and American; has worked on all kinds of wool and worsted and cotton mix goods and cotton worsteds; is familiar with all kinds of machinery used in wet and dry finishing; good references. 3536, Textile World Record, Boston, Mass.

Overseer Finishing, or stock dyeing and finishing; worked on Union cassimeres, satinets, all wool cassimeres, cheviots, dress goods, meltons and kerseys; 39 years of age, single, Scotch; with first class reference from past employers. 3449, Textile World Record, Boston, Mass.

Overseer of Finishing; position wanted by a man 34 years of age, English, married; worked on beavers, meltons, friezes, cassimeres, satinettes, chinchillas, cotton fancy and piece dyed worsteds; first class recommendation. 3729, Textile World Record, Boston, Mass.

Overseer of Woolen Finishing; position wanted by married man 30 years of age; worked on cheviots, dress goods, all grades of worsteds, overcoatings, suitings. 4048, Textile World Record, Boston, Mass.

Superintendent of Bleaching and finishing cotton goods; worked on all kinds of cheese cloth, butter cloth, sheetings, quilts, cambrics, long cloth, ducks and drills; age 31, English, married. 3218, Textile World Record, Boston, Mass.

Overseer of Finishing in a small woolen or second hand in a large mill; worked on face finished goods, beavers, kerseys, cassimeres and worsteds; good experience on gigging; understands all machines; good reference; 30 years of age, single. 4676, Textile World Record, Boston, Mass.

Overseer of Finishing; married man, 32 years of age; worked on all classes of woolen goods, kerseys, broadcloths, meltons, cassimeres, cheviots, thibets, etc.; familiar with the wet and dry end and all kinds of machinery; good reference. 4533, Textile World Record, Boston, Mass.

Overseer of Finishing or second hand in a woolen mill; 29 years of age, married, English; worked on woolen and cotton warp broadcloths and thibets; good reference. 4544, Textile World Record, Boston, Mass.

DYERS.

Overseer of Dyeing; 34 years of age, single; has worked on serges, wool and worsted, thibets, cheviots, kerseys, cotton and wool raw stock, and cotton and worsted yarns; is familiar with all makes of dyeing machinery; good reference; will not go West, South or Canada. 4519, Textile World Record, Boston, Mass.

Overseer of Dyeing and starching cotton piece goods; position wanted by a man who has had a wide experience on all kinds of cotton piece goods; is familiar with jig, two and three box machines, also one box padding machine; 45 years of age, American; good reference. 3781, Textile World Record, Boston, Mass.

Overseer of Dyeing; married, 29 years of age; has worked on raw stock, piece dyes, cotton, wool, worsted yarns and understands carbonizing in the piece or rags; good reference; could take a position at once. 4094, Textile World Record, Boston, Mass.

Overseer of Dyeing. Worked on resist colors, develop shades in cotton worsted, wool; stock dyeing and yarns. Good reference. 40 years of age, married. 4679, Textile World Record, Boston, Mass.

Overseer of Dyeing. Worked on raw stock, slubbing, yarns and piece dyes. Will not go West, South or Canada. 38 years of age, married, English. 4687, Textile World Record, Boston, Mass.

Overseer of Dyeing. Worked on dress goods, fancy cassimeres, cross dyes, hosiery, flannel, wool, cotton and shoddy, raw stock; prefers New England, 45 years of age, married, good reference. 4691 Textile World Record, Boston, Mass.

Overseer of Dyeing. Worked on worsted, wool, slubbing, piece dyes and some union stock. Good reference. 33 years of age, married. 4663, Textile World Record, Boston, Mass.

Overseer of Dyeing. Worked on wool, cotton and shoddy, mixes, raw stock, piece dyes, yarns, carbonizing and scouring. Good reference. 35 years of age, married. 4658, Textile World Record, Boston, Mass.

DYERS.

Overseer of Dyeing; position wanted by a man 43 years of age, married, Scotch; worked on cotton, wool and worsted dress goods, knitting yarns; good reference from mills in Scotland where he has been employed as manager of dye and finishing works. 3456, Textile World Record, Boston, Mass.

Boss Dyer; worked on cotton and wool and mixed stock, yarns and piece goods, hosiery, slubbing and raw stock; also scouring of wool; first class recommendations; 28 years of age, single, English. 3327, Textile World Record, Boston, Mass.

Overseer of Dyeing in a woolen mill, or dyeing and finishing in a felt mill; position wanted by a man 31 years of age, married; has worked on all kinds of cotton, wool, shoddy mixes, raw stock, yarns cotton and wool, piano felts, chest protectors and hot felts; good references; could take position at once; will go anywhere. 3911, Textile World Record, Boston, Mass.

Boss Dyer, scourer and bleacher in a knitting mill; worked on all grades of knitted underwear; first class references; will not go West or to Canada; 41 years old, married. 3004, Textile World Record, Boston, Mass.

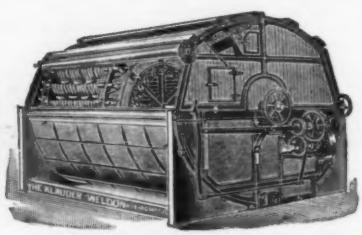
Overseer of Dyeing; position wanted by a man 51 years of age, married, with A-1 references; worked on stock for traction and army goods, wood and bisulphate vats, natural and synthetical indigo, also stock for cassimeres, blankets, robes, shawls, cotton, wool, shoddy mixes, cotton warps, mercerized effects. 3692, Textile World Record, Boston, Mass.

Overseer of Silk Dyeing. Worked on all kinds of silk yarn and piece dyeing. Would accept a position in two weeks' notice. 35 years of age, married. Good reference. 4616, Textile World Record, Boston, Mass.

Overseer of Dyeing. A man 46 years of age, married. Worked on knit underwear, woolens, yarns, etc. Familiar with all kinds of machinery. Good reference. 4511, Textile World Record, Boston, Mass.

RAW WOOL AND COTTON MACHINE.

MACHINES
sold on
2 MONTHS' TRIAL
YOU
TAKE
NO
RISK

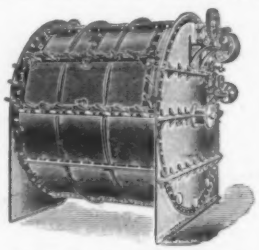


SKEIN AND SLUBBING MACHINE.

THE KLAUDER-WELDON DYEING MACHINE COMPANY

P. O. Box K, AMSTERDAM, N. Y.

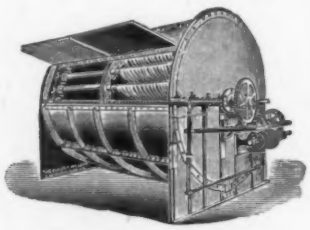
Machines for Dyeing, Bleaching and Scouring Woolen, Worsted, Cotton and Silk Skeins—Slubbing—Raw Cotton and Wool, Waste, Rags, Shoddy, Hosiery, Underwear, Hats, Caps, Knit Cloth, Tapes, etc.



SULPHUR HOSIERY MACHINE.

Special Machines for Sulphur Colors

WILL EARN THEIR COST IN
LABOR ALONE
IN FROM
6 TO 12 MONTHS
ACCORDING TO CAPACITY



SULPHUR SKEIN MACHINE.

MISCELLANEOUS.

Color Mixer or Dyer; 53 years of age; has worked on carpet yarns mostly, also plushes, fur hats, etc.; first class recommendations from leading mills where last employed; could take a position at short notice. 4531, Textile World Record, Boston, Mass.

Overseer of Cotton or woolen dressing; 47 years of age, married, American; worked on all classes of woolen and cotton goods, both plain and fancy; familiar with all makes of machines used in dressing departments in either a cotton or woolen mill; good reference. 4509, Textile World Record, Boston, Mass.

Master Mechanic, chief engineer or traveling salesman; position wanted by a man 45 years of age, married; has worked on all classes of engines, boilers and electricity; first class draftsman; could take a position at short notice; good reference. 4540, Textile World Record, Boston, Mass.

Sewing Machine Fixer or machinist; position wanted by a married man, 31 years of age; is familiar with all makes of Union Special, National, button-hole and Singer sewing machines; would prefer a position in New York State; good reference. 4551, Textile World Record, Boston, Mass.

Master Mechanic or Assistant. Worked on all kinds of cotton mill machinery and repairs; good reference, 28 years of age, married. 4118 Textile World Record, Boston, Mass.

Overseer of Bleaching, or assistant superintendent in a bleach and dye works. Worked on all kinds of goods, cotton, wool and silk underwear, familiar with all makes of machines, 36 years of age, single. Good reference. 4690 Textile World Record, Boston, Mass.

Overseer or Superintendent of Worsted Combing. Worked on all kinds of wools, long and short, on all makes of American, English and French combs; good reference from leading firms where employed, 37 years, married. 4101 Textile World Record, Boston, Mass.

Fixer on Ribbed Hosiery. Understands Brinton, Wildman, Crane, Pepper, Acme and Mayo machines, good reference, 23 years of age. 4112 Textile World Record, Boston, Mass.

Overseer of Worsted Combing or carding and combing. Worked on 1/4, 3/8 and 1/2 blood, fine Australian, mohair, camel hair and English luster wool; Taylor & Wordsworth & Co., Hoyle & Preston, Crompton & Knowles' combs and all kinds of gill boxes; 38 years of age, married, good reference. 4115 Textile World Record, Boston, Mass.

Master Mechanic or Chief Engineer in cotton or woolen mill. Understands all kinds of machinery, has had extensive practical experience on work that comes under a master mechanic, good manager of help, good reference, married, 43 years. 4107 Textile World Record, Boston, Mass.

Cloth Examiner in Commission House. Experienced on all classes of worsted and woolen goods, first class reference, 32 years of age, strictly temperate. 4104 Textile World Record, Boston, Mass.

Comber Man. Position wanted by a man 24 years of age; single; has worked on the Hetherington, Whitin, Nasmith, Dobson & Barlow combers. Wants a position in Massachusetts or Rhode Island only. 4085, Textile World Record, Boston, Mass.

Sewing Machine Fixer. Position wanted by a man, 25 years of age, single. Familiar with Wheeler & Wilson, single and double needle, button and buttonhole machines, also Wilcox & Gibbs and Union Special. Will not go West, South or Canada. Good reference. 4573, Textile World Record, Boston, Mass.

Overseer of Beaming, quilling or warp gassing. Position wanted by a man 44 years of age, married. English. Familiar with fancy cotton and silk beaming. Understands all makes of machinery used in the department. Good reference. 4560, Textile World Record, Boston, Mass.

Overseer of Slashing, spooling, warping, drawing and long chain beaming. 42 years of age, widower. Worked on white and colored. Work from 8s to 100s cotton. Familiar with all kinds of machines. Good reference. Will go any place for a good position. 4572, Textile World Record, Boston, Mass.

MISCELLANEOUS.

Overseer Worsted Combing; position wanted by a man 38 years of age, married; has worked on all classes of wools; is familiar with the Crompton & Knowles "Nobles Combs," Taylor & Wordsworth and all kinds of gill boxes; good references. 3903, Textile World Record, Boston, Mass.

Master Mechanic; position wanted by a man 44 years of age; has had experience as master mechanic in cotton and knitting and all textile mills; will not go West or Canada; could take a position at short notice. 3782, Textile World Record, Boston, Mass.

Overseer Boarding and finishing hosiery; all kinds of men's, women's and children's hosiery, except silk; age 41, American, married; can furnish references. 3035, Textile World Record, Boston, Mass.

Overseer of Seaming; position wanted by a man 27 years of age, married; has worked on ladies' cotton hose and all grades of cotton underwear; is familiar with Willcox & Gibbs, Hepworth, Campbell & Clute stitching, welting, looping, etc., machines; good references. 3683, Textile World Record, Boston, Mass.

Overseer of Tenter Frames in cotton mill; position wanted by a man 44 years of age, married, Scotch; has worked on sateens, lawns, mull skirtings and shirtings; is familiar with Butterworth, Stewart and Granger tentering frames; good references. 3651, Textile World Record, Boston, Mass.

Overseer of Beetling Department; position wasted by a man 43 years of age, married, Irish; has had ten years' experience on cotton goods in this country, 12 years' experience on linen goods in Ireland; has worked on cotton goods of all counts from 67 by 72 to 96 by 32, also handled all kinds of beetling machines; will not go South or Canada; good reference. 3807, Textile World Record, Boston, Mass.

Second Hand in Knitting Mill; position wanted by a man 21 years of age, American; worked on all kinds of goods on latch needle machines; familiar with the following makes of knitting machines: Nye & Tredick, McMichael & Wildman, Scott & Williams, H. Brinton & Co., Stafford & Holt; could take a position at two weeks' notice; good references. 3975, Textile World Record, Boston, Mass.

Overseer of Combing; position wanted by a man 27 years of age, married, English; has worked on men's wear and fancy dress goods; is familiar with Noble combs of all makes, Crompton, Taylor, Wadsworth, Smith and Prince; good references. 3617, Textile World Record, Boston, Mass.

Competent Cost Accountant; position wanted by a young man at present with firm of business economists; desires an executive connection with large manufacturing concern who are in need of a thoroughly wide awake man with executive ability and wide experience in textile and other lines and one who will guarantee to lower the cost of production in a large measure; good reference. 4553, Textile World Record, Boston, Mass.

Second Hand in woolen card room; married man, 32 years of age; worked on all kinds of stock, cotton, wool and shoddy mixes; good reference from leading mills; could take a position at once. 4532, Textile World Record, Boston, Mass.

Overseer of Beaming, slashing, spooling, long chain quilling and warping; worked on fancy shirtings, silk and cotton coat linings, ginghams, awnings, tickings and denims; familiar with the Lowell, Phillip, Howard & Bullough, Draper and Entwistle machines; two workers in the family; 40 years of age, married; good reference. 4617, Textile World Record, Boston, Mass.

Master Mechanic or chief engineer; married man, 40 years of age; understands all makes of machinery used in a cotton or rolling mill; understands electricity, steam engines and would go any place for a good position; good reference. 4506, Textile World Record, Boston, Mass.

Master Mechanic for cotton or woolen mill; familiar with steam and electric power and all machinery connected with either of the above; good reference; 31 years of age, married. 4633, Textile World Record, Boston, Mass.

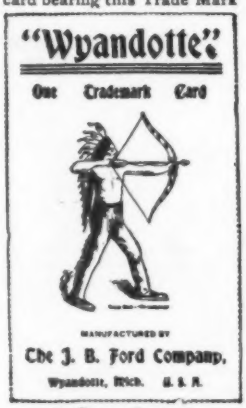
YARNS

Cleaner, whiter and more lofty yarns

Yarns that take the dye evenly and show no streaks; yarns with brighter and more lasting colors; yarns that look better and sell better.

Such are the results when

None Genuine except with card bearing this Trade Mark



In Every Package.

WYANDOTTE TEXTILE SODA

is used in the scouring processes. Why not order a lot of this article from your supply house, and write us for additional information?

The J. B. Ford Co., Wyandotte, Mich.

Sole Manufacturers

THIS SODA HAS BEEN AWARDED THE HIGHEST PRIZE WHEREVER EXHIBITED.

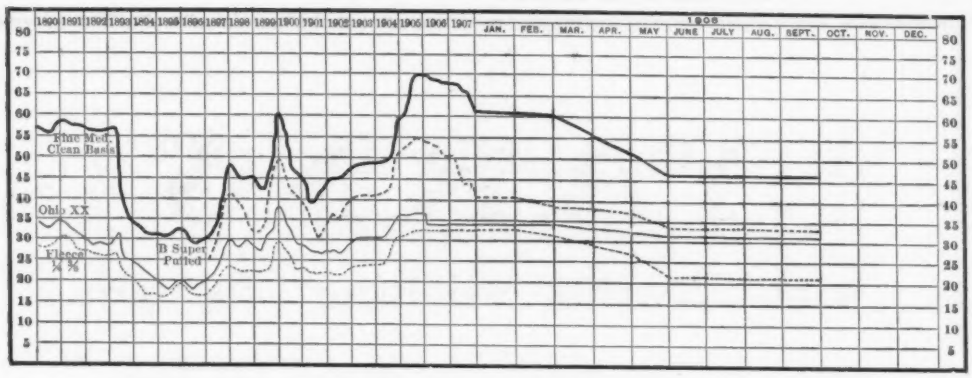


CHART SHOWING RANGES IN THE PRICE OF WOOL TO DATE.

The Wool Market.

As was expected the wool market is dull during the presidential campaign. The mills are buying very little raw material of any kind. Their requirements are below the average owing to the depression in the goods market, while prices afford no encouragement for speculation. As 1908 approaches the end, the trade realize more clearly than ever that it is facing a period of great uncertainty as a result of tariff revision. In the past wool has always been the center of such disturbances and the coming revision promises to be no exception to the rule. This leads dealers and manufacturers to act with great caution, the rule being to let the owners of wool carry the burden of interest, storage and risk of a further decline, until political and business conditions are settled. Inquiries are confined to cases where mills have run short of special grades and have been forced to buy small lots to piece out. As a rule manufacturers have very small stocks on hand. This means that improved business in the goods markets will have an immediate effect on raw material.

Rhode Island, Woonsocket. Difficulties rising out of the decision of the management of the Montrose Woolen Co. to institute the two-loom system have been amicably settled at a conference between a committee of the weavers and Jacob H. Hary, president and superintendent of the plant. The mill is in full operation.

Vermont, Bennington. Business of the textile manufacturing concerns is gradually improving. Holden Leonard & Co. have received large orders for dress goods that will keep the works running full for several months. The full force of help is being put to work. H. E. Bradford & Co., manufacturers of men's ribbed and flat woolen and merino underwear, are running evenings in the carding, spinning and knitting departments.

New Jersey, Passaic. A tract of 110 acres known as Cadmus Farm has been purchased by German interests for the alleged purpose of establishing a worsted spinning plant on the Passaic River about two miles north of the New Jersey Spinning Co.'s plant at Garfield, N. J. Forstmann-Huffmann Co. and Arnold & Co. of Germany are among the names mentioned as interested. 60,000 spindles are mentioned as the proposed equipment.

New York, Auburn. The Auburn Woolen Co. has announced that the mills will be operated from now on, on the full time schedule. Sufficient orders have been received to warrant this announcement. For a long time, the plant has been run on 4 days a week.

Pennsylvania, Philadelphia. Benj. Greer's Bellevue Worsted Mills on Wister St., Germantown, which have been out of commission for the past several months are still shut down and it is not known when they will be started up again. The plant contains 200 looms, which are operated on men's wear, which they dye and finish and sell direct and through agents.

Rhode Island, Greenville. The Hygienic Fabric Co. has been incorporated at the office of the Secretary of State with capital stock of $50,000. The incorporators are Thomas C. Asplund, Henry C. Babcock and Edwin A. Smith. The concern is authorized to manufacture and deal in cotton yarns and fabrics of all kinds. It is stated a plant will be started in Providence. Edwin A. Smith and Thomas C. Asplund are proprietors of the Hygienic Fiber Co. of this place.

Massachusetts, North Billerica. Both the Faulkner Mfg. Co. and the Talbot Mills are doing a brisk business. The spinning department of the Talbot Mills has been running overtime to keep up with other departments.

Michigan, Detroit. The Thistle Dye Works Co. owned by Ira McDougall and operated under the management of Alex McDougall is dyeing cotton, wool and worsted yarns. They report a very good business.

*Rhode Island, Enfield. The rumor that a new addition to the Esmond Mills would be built is incorrect, as no increase is contemplated for the immediate future. The addition on which construction work started late in 1907 is completed and is now in use.

At 2/5 the cost for installation as compared with leather belting

Plymouth Manila Rope Drives

are far more effective safer and cost much less for maintenance

Plymouth Rope Drives by their absence of slip, steadiness, freedom from electrical disturbances, great durability and low cost make the ideal drive for textile mills.

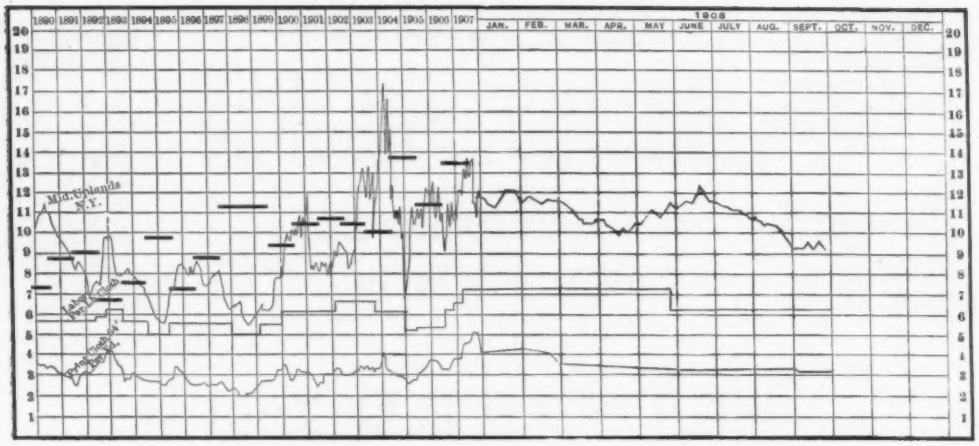
If you are about to build or remodel your mill you may be confronted with the problem of carrying your power to a distance or in a direction out of line with the driving shaft. In such cases the advantage of the rope drive will be manifest. Distance and direction make no difference to the efficiency of this system.

Put your transmission problems up to us. Our long experience in manufacturing, installing and using rope drives is at your service. Let us tell how much they will save in your mill.

Send for our booklet on "Rope Driving."

Plymouth Cordage Co.

North Plymouth, Mass.


1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907
1908
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
Mfg. Goods N.Y.
Liverpool Port Rate
Liverpool Spot

The short, heavy, horizontal lines indicate the size of the cotton crops in millions of bales.
CHART SHOWING RANGE IN THE PRICE OF COTTON TO DATE.

The Cotton Market.

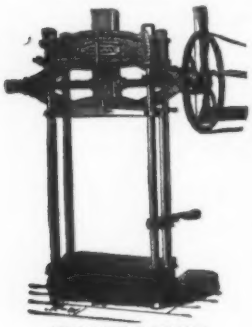
Trade in spot cotton and futures has been quiet. The usual stock of conflicting reports regarding the weather have been forthcoming, but with less than the usual effect on prices. One of the leading causes for this situation is the cloud under which speculation itself rests. The recent exhibition of speculative frenzy on the exchange was spasmodic and finds no response among the speculative contingent. The New York Exchange has become so far removed from the legitimate cotton trade and the abuses have become so pronounced that its members have taken fright as to the consequences. To protect themselves they are making an investigation of their own methods and have passed the word along that business on the exchange must be kept within decent bounds until the danger to the Exchange has passed. This accounts in large part for the dullness of speculation. Turning to the situation in the legitimate trade we find a marked decrease in the consumption of cotton and a new crop coming under conditions favorable to a large yield. The movement into sight from Sept. 1 to dates given is estimated by the "Chronicle" as follows:

1908, Sept. 25 ..... 933,919 bales.
1907, Sept. 26 ..... 768,892 bales.
1906, Sept. 28 ..... 956,705 bales.
1905, Sept. 29 ..... 1,246,900 bales.
1904, Sept. 30 ..... 1,373,847 bales.
1903, Oct. 1 ..... 902,902 bales.

The world's visible stock on Sept. 25 is estimated by the same authority at 1,997,589 bales, as compared with 2,318,254 bales on same date in 1907, 1,970,746 bales in 1906, and 2,928,939 bales in 1905.

*Massachusetts, North Adams. Approval to the plan of organization of the Arnold Print Works, reported some time ago, has been given by creditors representing about $5,750,000 out of the $6,700,000 possible claims against the company. The reorganization plan having proven acceptable, the next step will be the securing of a loan of $2,200,000 from the Central Trust Co. of New York for a period not to exceed three years. With this money, together with the cash now in the hands of the receivers, the creditors will be paid 50 per cent. of their claims in cash, the remaining 50 per cent. being paid in the bonds of the two new companies to be formed, as given in our report of August 8. The Arnold Print Works Co. and the Arnold Cotton Mills, the two new companies which will take over the property of the bankrupt concern, will soon be organized. It is stated that the directorate of these two companies will include several interests not hitherto identified with the companies.

WEIMAR BROS. MANUFACTURERS OF Cotton Mercerized Tapes,
SPOOL TAPES, BINDINGS AND NARROW FABRICS FOR UNDERWEAR AND OTHER TRADES.
Phone Connections. Works, 2046-48 Amber Street, PHILADELPHIA, PA.



KNUCKLE JOINT.

BOOMER & BOSCHERT

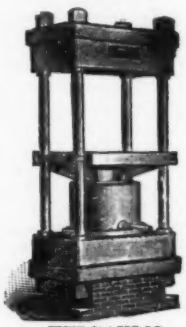
BALING PRESSES

ARE THE STANDARD

Hydraulic or Knuckle Joint
Any Size .. Any Power

Boomer & Boschert Press Co.

338 West Water S., SYRACUSE, N. Y.
Southern Agent, A. H. WASHBURN, Charlotte, N. C.



HYDRAULIC.

STANDARD 75-1

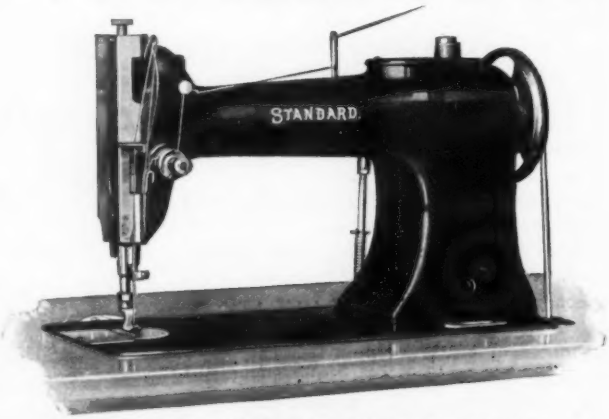
HIGH GRADE LOCK STITCH SEWING MACHINE.

We offer this product of extraodinary inventive genius and superior mechanical skill with the greatest confidence in its capacity to produce, economically and satisfactorily, a greater range of perfect work than is possible on any similar machine.

The 75-1 Standard makes it unnecessary to have two lines of lock stitch machines for different weights of materials, as the same machine is just as suitable for use on the heaviest tailoring or overall work as on medium weight materials or thin goods, such as muslin and chiffon. The stitch closes and is completed with the point of the needle ⅛ inch above the needle plate.

The greater range of work adds an appreciable value to the 75-1 Standard, making it an especially desirable machine for general use and a step in advance of any similar machine heretofore produced.

Years have been spent by men, recognized as the best experts in the sewing machine world, for a quarter of a century, in studying, testing and perfecting each and every part to meet the most exacting requirements in practical use and to accurately assemble them into a perfect operating whole. The fruit of this long experience and study is a lock stitch machine of unusual merit and greater general usefulness; nothing whatever experimental, all parts have proven to be dependable and suitable by years of constant use and efficient service.



STANDARD 75-1. 2,800 Perfect Stitches Per Minute.

The upper and lower shafts are connected by a flexible gear connection made of indurated fibre links. It is a great improvement on all leather and twine belts now in use. It eliminates any possibility of the machine getting out of time and affords a perfect, durable, quiet connection. The 75-1 Standard is simple, easily mastered by machinists and operators and cannot easily get out of order. The handling of goods is regular and no instructions are needed to make proper adjustments and to use the machine successfully. We will be pleased to send a sample machine to any responsible manufacturer on approval, to be paid for in thirty days, or returned at our expense at end of thirty days, if not entirely satisfactory; fits almost any power table opening. A free trial will quickly demonstrate its greater usefulness. Write us today for full particulars.

THE STANDARD SEWING MACHINE CO., 6423B Cedar Ave., Cleveland, Ohio.

Manufacturers of Reliable Plain Stitchers, Button Hole, Button Sewer, Zigzag, Overseaming Machines, Power Table Equipment, Etc.

A Rigid Examination Reveals No Defects in the

CROSBY SPRING-SAVE GLOBE AND ANGLE VALVE.

NO BETTER VALVE CAN BE MADE.

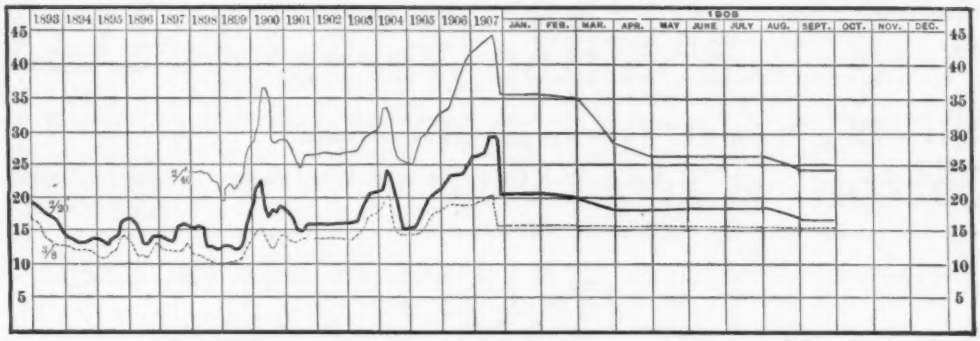
All Working Parts Renewable Without Removal from Piping. ALL PARTS INTERCHANGEABLE. THEY have a full opening through them. WHEN COMPLETED ARE TESTED under more than 400 lbs. pressure. We guarantee them NOT TO LEAK AT HIGH PRESSURES. MADE IN BRASS AND IRON in the various styles furnished to the trade. **Try One or More Valves and BE CONVINCED.**

CROSBY STEAM GAGE AND VALVE CO.

Stores: BOSTON, NEW YORK, CHICAGO, LONDON.

Office and Works: BOSTON, MASS.

Yarn Department.



GRAPHIC CHART SHOWING RANGE IN THE PRICE OF COTTON YARN TO DATE.

The Cotton Yarn Market.

There has been considerable activity in the yarn market during the past few weeks, and while the demand for yarn has not been sufficient to cause any advance in the prices of yarn, it has created a considerable better feeling in the trade. We have heard of some spinners that have resumed full time, and have orders to take their production for at least a few weeks ahead. Manufacturers as a general thing are getting some orders, for prompt delivery. There seems to be no question that stocks of all kinds are low in the hands of jobbers on hosiery and underwear and other lines. We however do not expect to see any decided change in the market until after election.

Prices today are about as follows:

Eastern Cops.

6s	17¼
8s	17½
10s	17¾
14s	18¾
16s	19¼
18s	19¾
20s	20¼
22s	20¾
24s	21¼
26s	21¾
30s	22¼
34s	22¾
36s	23¼
40s	23¾

On cones, ¾c. more up to 14s; 1c. more from 15s to 22s; 1 1½c. from 23s to 35s, and 2c. above that.

Eastern Two-Ply Skeins, Carded Peeler.

12s	20
14s	20½
18s	22
20s	23
24s	23½
26s	24
30s	25
36s	28
40s	29
45s	33
50s	36
55s	39
60s	44

Eastern Two-Ply Warps, Carded Peeler.

2/30s	25
2/36s	28
2/40s	29
2/45s	33
2/50s	36
2/60s	44

Egyptian Weaving Yarns.
Single Skeins Combed.

30s	35
36s	37
40s	38
45s	40
50s	45
55s	48
60s	52
70s	57

The Philadelphia Market.

7s and coarser	15½
8s and 9s	15½-16
10s	16
12s	16½
14s	17
16s	17½
18s	18
20s	18½
22s	19
24s	19½
26s	20
30s	20½

THE J. R. MONTGOMERY CO.,

Windsor Locks, Conn.

MANUFACTURERS OF

Mercerized Cotton Yarns Gives the High Silk-Like Lustre in Knit Goods and Woven Fabrics.

Novelty Yarns Boucle, Bourette and Spirals, in Cotton, Wool, Worsted, Mohair and Silk.

Cotton Warps on Beams, Jack Spools and Tubes. In Fancy, Twist, Colors and Printed.

GREENE & DANIELS MFG. CO.,

COMBED, CARDED AND GASSED

Yarns, Threads, Twines and Chain Warps.

DYE SULPHUR BLACKS DIRECT IN COPS, CONES OR TUBES.

Colored and Bleached Yarns Furnished in any manner desired by the trade.

Pawtucket, R. I.

MONUMENT MILLS,

Manufacturers of

White, Colored, Fancy and Double Twist

COTTON WARPS

HOUSATONIC, MASS. 4s to 60s.

The Merwin Paper Company

Hartford, Conn.

Press Papers and Fender Boards

Correspondence Solicited

Mills at Rainbow, Conn. Address Inquiries to Rainbow, Conn.

40s	25
50s	33

Southern high grade mule yarn:—

Cones.

10s	18½
12s	19
14s	19½
16s	20¼
18s	20¾
20s and 22s	21¼-21¾
24s	22¼

Southern frame yarn, lower grades:—

6s and 8s	15
10s	15½

Eastern cones (high grade quality):—

10s	19½
12s	20
14s	20½
16s	21¼
18s	21¾
20s and 22s	22¼-22¾

Skein yarn (mostly Southern):—

4s and 8s soft	15
10s and 12s	15½
14s to 20s	16-17
22s	17½
10/2	16
16/2	16½
20/2	17½
30/2	19
40/2	24
16/3 slack	17½
12/3 slack	17
7/6 skein	15½
8/3 carpet	15
8/3 slack	15½
9/4 slack	15½

Warps (Southern):—

10s to 12s	15½
14s	16
16s	16½
20s to 22s	17-17½
26s	18
14/2	16
16/2	17
20/2	17½
24/2	18½
30/2	19½
40/2	26

Mixed colored yarns (mock twist, half colors):—

6s to 10s	18-18½
12s to 14s	19-20
16s to 18s	20½-22

Mock Egyptian, 2c. advance over white.

Egyptian, 5 to 6c. above the best quality white.

Massachusetts, Taunton. The directors of the Taunton Narrow Fabric Co/ have voted to issue $11,325 additional of the $30,000 of authorized capital stock. This concern is very busy.

JAMES E. MITCHELL CO., COMMISSION MERCHANTS.
Cotton Yarns
AND COTTON CLOTHS.
122-124 Chestnut Street, PHILADELPHIA, PA.
73 Leonard Street, NEW YORK.
Brown Building, 185 Summer Street, BOSTON, MASS.
25 South Tryon Street, CHARLOTTE, N. C.

CATLIN & CO.,
Cotton Yarns.
345 Broadway, NEW YORK.
67 Chauncy Street, BOSTON.
128-130 Chestnut Street, PHILADELPHIA.
605 Medinah Temple, CHICAGO.

Harding, Whitman & Co.,
Dry Goods Commission Merchants,
COTTON AND WORSTED YARNS.
BOSTON. NEW YORK. PHILA.
CHICAGO. BALTIMORE. ST. LOUIS.

A. D. Salkeld & Bro.
COMMISSION MERCHANTS
DEP'T. FRED'K VIETOR & ACHELIS
COTTON YARNS
66-72 LEONARD STREET - - NEW YORK

Fred Sternberg & Co.
530 Broadway, - NEW YORK.
MERCERIZED TURKEY RED GASSED } COTTON YARNS.

LUDWIG LITTAUER,
SUCCESSOR TO
MOELLER & LITTAUER, 109 Greene St., New York
SILK, WORSTED, WOOLEN YARNS COTTON AND MOHAIR
Polished Threads and Tinsel. Artificial or Wood Silk.
Mercerized, Turkey Red, Fine Gassed Yarns.
SILK MILL, BOONVILLE, N. Y.

High Grade Hosiery Yarn
White and Colors. All Numbers. Sewing Twines on Cones and Tubes
SPECIALTIES IN WEAVING YARN
Black and White. Double and Twist for Woolen Trade.
CANNON MILLS 53-5 Worth Street, New York
Philadelphia Office, 205-7 Chestnut St.

Reels for Cotton WOOLEN AND WORSTED
Patented Hosiery Winders, Cop Winders and Spoolers.
LINDSAY, HYDE & CO.,
2124 to 2130 East York St., PHILADELPHIA, PA.

G. T. Crocker, Pres. W. F. Stiles, Treas.

ORSWELL MILLS

Fitchburg, Mass.

Capacity, 45,000 Spindles.

HIGH GRADE YARNS

From Egyptian and Peeler Cottons, Carded or Combed, in Chains and Skeins, on Balls, Beams, Spools, Cops, Cones, Tubes, Single or Twisted.

Cotton Yarns

Jenckes Spinning Company
Pawtucket, R. I.

Carded and Combed single and twisted Yarns and Threads from Peeler, Sea Island and Egyptian Cottons, on Cops, Cones and Tubes or in Skeins and Warps. Six Cord Thread Yarns a Specialty **Bleached or in colors**

GRANT YARN CO.,

COMBED AND CARDED COTTON.

YARNS 40's and above. AND
FITCHBURG, MASS. **WARPS**

F. W. MAURER & SONS CO.

MANUFACTURERS OF

TAPES, BINDINGS, NARROW FABRICS AND EDGINGS FOR NOVELTY CURTAINS

Office, 528 Cherry St. Factories, 529 & 531 Arch St. and 524 Cherry St., and Germantown Ave. & Bristol St.
PHILADELPHIA

Century Cotton Mills

Manufacturers of

Hosiery Yarns

Nos. 10s to 30s Sell Direct

South Boston - - - Virginia

MARYLAND WOOL AND COTTON EXCHANGE
906-908 Streeper St., Baltimore, Md.

High Grade Hosiery and Weaving Yarns all colors.

Operating Well Equipped Bleachery, Dyehouse, Spool, Cone and Twist Mill.

Ballou Yarn Co.

PROVIDENCE. R. I.

Harness and Seine Twines and other Job Gassing, Winding, etc. All Numbers

GASSED YARN SPECIALTIES

C. M. BLAISDELL, Pres. and Treas. G. A. BLAISDELL, Vice-Pres. and Sec'y.
Established 1860—Incorporated 1893.

THE S. BLAISDELL, JR., CO.,

COTTON, EGYPTIAN PERUVIAN

American Long Staple a Specialty. Shipments direct to mill from Egypt, Peru and all American Southern Points.

CHICOPEE, MASS.

Cotton Waste Purchased on Yearly Contract from Mills.

Beacon Narrow Fabric Co.

Braids & Tapes

Notre Dame St. FALL RIVER, MASS.

EDDY & STREET,

Cotton, Woolen

Yarns and Braids

Worsted, Spun Silk.

PROVIDENCE, R. I.

CUMINAT

The remarkable German finish for cotton, wool and worsted cloths

Is the Simplest and Cheapest means for giving Goods Fullness, Body and Weight.

is guaranteed harmless to fibre and color, does not coat the yarn, but closely unites with it, eliminates dusting off during the napping process. Does not change goods while in stock.

Write for price and particulars

The New Brunswick Chemical Co.
New Brunswick, N. J.
All business transactions treated confidentially.

The Woolen and Worsted Yarn Markets.

The spinners of worsted yarns, both Bradford and English spun, claim that they are getting much better inquiries and while the demand is only limited, at this time, it is anticipated that in the near future it will exceed the supply, and that prices will have to advance. As a further indication of this fact, it may be said that the wool market is firmer than it has been for some months back and the price of the raw material has advanced considerably within the past few weeks and that when this rise reaches the spinner there is no doubt but what the manufacturer will have to pay a higher price for his yarn.

Some few spinners of woolen yarn, in this city, claim to have enough business on hand to keep them running full time and some others are running their plants overtime in an effort to fill orders. This is due, it is said, to the condition of the sweater trade, which is in a better condition now, and buying more yarn, than it ever has done before.

The manufacturers of men's wear are now hurrying deliveries of sample pieces with the object in view of completing same to send their men on the road the first week in October. Of course there will be no business of any amount until they get returns from the road men in the way of duplicate orders. The market is very quiet at present, the demand for immediate shipments in heavy weight goods having petered out. Spring duplicates are not being placed at all. Things look much better, everyone seems to be more sanguine for the future and everybody tries to act conservatively, while in the face of a Presidential election you can hardly expect things to warm up particularly on top of the present complications.

Rain cloths seem to be dead. The Oxford mixes, which used to sell so well, can't be sold at any price, the trade being well loaded up on them.

Philadelphia is celebrating her 225th anniversary. This year is the 207th of the Rhoads leather business in America. Our business has been handed down to us in direct line through six generations of ancestors. In 1699 the first of the six bought a tract of land in Delaware County, Pa., for his son, who in 1701 established a tanyard thereon. The senior member of our firm was the fifth and last in the line to operate this tannery. In 1868 he moved to Wilmington, Del.

To the good old ways handed down from the fathers, we have been alert to apply science and experiment, and to add such improvements in methods and machinery as stand the test of use. We have a modern factory of large capacity, and the growth of our business makes us confident that our methods, equipment and output will bear comparison. Our constant aim is to produce the best belt at lowest cost consistent with high quality. Those who have for years used it best know the service given by

RHOADS LEATHER BELTING

Let us submit samples and quotations on your needs.

J. E. RHOADS & SONS – Philadelphia, 12 N. Third St.; **New York,** 40 Fulton St. Factory and Tannery, Wilmington, Del. **Boston:** Hamblet & Hayes Co., Eastern Agents, 105-111 Summer St.

LINEN YARN IMPORTER.

HUGHES FAWCETT, 115 Franklin Street, NEW YORK.

Flax, Hemp and Jute Line and Tow Yarns,
For Weaving Purposes.
Linen Jacquard Harness Twines,
Fine Cotton Harness and Heddle Twines,
For Cotton, Silk, Woolen and Carpet Manufacturers.
Correspondence solicited. Samples promptly furnished.

DUNCAN & YOUNGS
95 Worth Street, NEW YORK
Practical Manufacturers of
YARNS, THREADS, TWINES, CORDS, ROPE
AND MILL SUPPLIES
Anything in the line you cannot get anywhere else apply to us.

French System. **B. F. BOYER CO.,** Bradford System.

MANUFACTURERS OF

WORSTED AND WOOLEN YARNS,

Office and Mill, River Ave. and Marlton St. CAMDEN, N. J.

KROUT & FITE MANUFACTURING CO.,

Manufacturers of

Silk, Cotton and Mercerized Narrow Fabrics

SPOOL TAPES A SPECIALTY.

Telephone Connection. Office and Mill, Allegheny Ave. and Emerald St., PHILADELPHIA.

Pocasset Worsted Company

WORSTED YARNS

100 Boylston Street, - Boston, Mass.

H. Hodgson, Pres. & Treas. Fred Hodgson, Gen. Mgr.

QUEENSBURY MILLS

Mohair, Lustre and Worsted Yarns

—Single and Two Ply—

Grey—Colors on Mixtures **Worcester, Mass.**

—WORSTED YARNS—

RICHARD CAMPION.

SELLING AGENT FOR

Bristol Worsted Mills,
Highland Worsted Mills.

300 Chestnut Street,
PHILADELPHIA, PA.

Woolen and Merino YARNS

Eaton Rapids Woolen Mills,

EATON RAPIDS, MICH.

Bradford System French System

STEPHENSON & CO.

Worsted and Woolen Yarns

240 Chestnut Street
PHILADELPHIA.

FRANK A. TIERNEY,

TOPS, NOILS, ROVINGS, YARNS.

Wool, Silk, Mohair, Camels Hair, Ramie.
Garnetted Stocks
Silk also Ramie Tops and Noils, Ramie, Silk, and Silk Noil Yarns,
Special Textile Fibres and Novelties.
Wool Exchange Bldg., 260 West Broadway, New York.

Joseph D. Swoyer & Co.,

Manufacturers and Commission Merchants

Woolen, Worsted and Cotton Yarns

HOWARD AND BERKS STREETS,
PHILADELPHIA.

Testing of Yarns.

Count-Twist-Strength-Moisture-Chemical Test

When in doubt apply to

NEW YORK SILK CONDITIONING WORKS

138-140-142 Spring St., New York

Lowell Crayons

Meet the requirements of any cotton, woolen or worsted mill.

May we send samples? 15 colors and white.

Lowell Crayon Co., Original Manufacturers Lowell, Mass.

Trade Mark on every box.

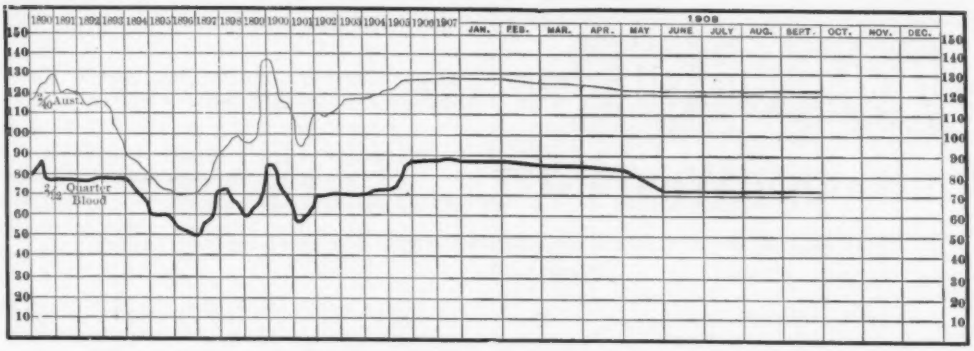


CHART SHOWING RANGES OF PRICE OF WORSTED YARNS.

With cool weather there certainly should be a good bunch of business coming to everybody; the retail stocks are low and from the way business points there is going to be a demand for merchandise. Sample blankets, for the fall of 1909, are beginning to make their appearance and every one is at sea as to what to do regarding the coloring proposition. The general opinion seems to be for darker colors and more subdued styles, but just what shades they want in these darker colors is for the selling agents and mills to solve, for upon this solution depends the season's business. Almost all shades are suggested with the exception of browns and some people look for a return to the grey mixes, but from the present outlook, there will be an enormous amount of shades and colors in the market for 1909. As far as values are concerned every one is trying to scale off the last possible penny to produce a cloth cheaper than his neighbor.

Some of the mills running on wool goods have turned their attention to making chevron effects and to imitate the fine worsteds, but so far they have not been a success and the mills who evidently thought they could run on these goods and do a good business are pretty well stocked up and are now offering them at ridiculously low prices to get rid of what they have and run their machinery.

The sweater and fancy knit goods business has been very good for the past four weeks, but it may be said that this has been a delayed season and manufacturers are crowded for prompt shipments, which is compelling them to work night and day to fill orders. The warm weather during the latter part of September has helped conditions considerably from the fact that the jobbers and retailers are not anxious to increase their stock, but the anticipation is that the first cold snap will create quite a degree of activity in this line.

The underwear manufacturers of both cotton and wool goods retailing from 50 cents to $2.50 are having a splendid duplicate business from the jobbing trade, indicating that they are selling the retail trade for their immediate wants. All indications point to a continuance of this business for the next sixty days. There are no surplus stocks in the hands of the manufacturers and from the amount of the re-orders placed with the jobbers there is no doubt but what there is little surplus stock in the hands of the retailers.

BRADFORD SPUN YARN.

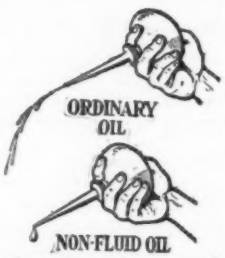
2/12 to 2/16 low common	60-62½
2/26 to 2/28 common	67½-70
2/12 to 2/20 1/4 blood	70-72½
2/26 to 2/28 1/4 blood	72½-75
2/32 to 1/4 blood	75-77½
2/20 3/8 blood	82½
2/26 3/8 blood	82½-85
2/32 3/8 blood	85
2/36 3/8 blood	85-87½
2/40 1/2 blood	1.02½-1.05
2/40 delaine	1.07½-1.12½
2/50 delaine	1.12½-1.17½
2/40 Australian	1.17½-1.22½
2/50 Australian	1.25-1.27
2/60 Australian	1.32½-1.40
2/24 lustre	85
2/28 lustre	87½
2/30 and 3/32 lustre	90-92½
2/36 lustre	97½-1.00
1/24 worsted and 80s single cotton for raincloths	1.00-1.05
1/24 worsted and 120 single cotton for raincloths	1.15-1.20

FRENCH SPUN YARN.

1/20 1/4 blood	75-77
1/20 high 1/4	80-82
1/20 3/8 blood	90-92½
1/20 1/2 blood	93-95
1/20 high 3/8	85-87
1/30 high 1/4 blood	83-85
1/30 3/8 blood	85-90
1/30 1/2 blood	95-1.00
1/40 1/2 blood	1.00-1.05
1/50 delaine	1.20
1/40 Australian	1.25
1/50 Australian	1.30
1/60 Australian	1.40
1/70 Australian	1.45

TRADE MARK REGISTERED IN
NON-FLUID OILS
UNITED STATES PATENT OFFICE

Who Said Oil Was Best?



These pictures tell the story. For every drop of ordinary oil that shoots into the bearings four go wrong. If you like to dope up and wipe your machine frequently, if you don't mind the muss, and don't care what the oil bills are and are not adverse to hot boxes, stick to oil.

If, on the other hand, you want troubleless and cool bearings, like cleanliness, haven't spare time to waste, and are looking for your money's worth, NON-FLUID OIL is what you want. It flows in big fat drops, one at a time. There can't be muss for there's no waste.

If NON-FLUID OILS didn't give more actual lubrication than three to five times as much oil we would'nt ask you to send for the free sample can. Write to-day.

ORIGINAL AND SOLE MANUFACTURERS

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Cotton Yarns, Cotton Cloth, Silesia, Sateens,

For the Underwear Trade.

Knitting and Weaving YARNS.

Cones, Cops, Warps, Skeins,
Single, Double, Three-Ply, etc.
Peeler, Egyptian, Mixed Colors.
Large Assortment.

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The Rag and Shoddy Market.

Stagnation is the general condition in the rag and shoddy trade. Mills are buying very little and there has been practically no disposition on the part of dealers to trade among themselves. The signs of a revival of carded woolen goods carry encouragement to the dealers in rags and shoddy. The principal reason for the extreme depression which has prevailed in this market for years during a period of great prosperity has been that fashion has neglected woolen goods. It is not impossible that a change of fashion to cheviot and other carded wool effects may result in the opposite anomaly of prosperity in the rag and shoddy trade when general business conditions are depressed. This is the idea in which dealers are now finding comfort.

SHODDIES AND EXTRACTS.

White yarn, best all wool	41-48
White knit, all wool, best fine	30-40½
White knit, No. 2	30-39
Light yarn, extra fine	30½-32½
New pure indigo blue	31-33

Merino.

Fine light, all wool	26-27½
Medium light, all wool	17½-19
Fine black, all wool	25½-30
Fine dark, all wool, best grade	21-22½
Medium dark, all wool, No. 2	15-17½
Red knit stock, strictly all wool	20-22½
Red flannel, all wool	
Dark blue for hosiery, strictly all wool, No. 1	19-22
Dark blue for hosiery, not all wool, No. 2,	16-18

WOOLEN RAGS.

Fine merchant tailors	10-12
Choice light colors	16½-17½
Browns	11½-14½
Blacks	10-13
Fine blues, plain	11-12½
Fine dark	10-13½
Medium dark	6½-10

Worsteds.

Blue	15½-19½
Black	20-23

Serges.

New black	16½-18
New blue	

Flannels.

New scarlet	19-20
New blue	16-19
Cloakings	4-7

SOFTS AND KNIT STOCK.

Soft woolens, best	6-8

CHENEY BROTHERS

Silk Manufacturers. So. Manchester, Conn.

Trams, Organzine and Spun Silks in the hank, or on spools and cones for woolen manufacturers.

Silks for electrical uses, insulation and special purposes made to order.

Knitting Silks, Ribbons and Piece Goods for Trimming Knit Goods.

Dress Silks, Satins, Linings, Printed Pongees, Foulards and Decorative Silks; Upholstery Goods, Ribbons, Sashes, Plushes and Velvets.

WILLIAM RYLE & CO.,

Foreign and Domestic

Spun Silk Yarns and Noils.

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Importers of European and Asiatic Raw Silk.

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INSULATING AND BRAIDING SILKS.

ORGANZINE, TRAM & HOSIERY SILKS.

Fast Dye Organzines for Woolen Manufacturers a Specialty.

Mills: Bethlehem, Pa., Phila., Pa., Scranton, Pa. New York Representatives, Wm. Ryle & Co., 54 Howard St.—Phila. Office, 4015 Clarissa St., Nicetown.—Chicago Office, 188-190 Market St.—Boston Office, 78 Chauncy St.

Crochet Lace Edgings

Spun Silk, Splicing Yarn, Mercerized Yarns, Cotton Warps, Sewing Threads, Tapes, Braids, Domets, Cambrics, Silesias.

Write for Prices and Samples.

George W. Chapin, 229-231 Church St., Philadelphia.

Old white flannels	20-23½
Old red flannels	12-18
Old blue flannels	9½-10½
Old plaids	8-10
White stockings	20-23
White hood stock	20½-23
Clear hoods	9-11

Dyestuffs and Chemicals.

Acids.

Acetic, 100 lbs.	2.60-3.00
Citric, domestic	50-52
Oxalic	8-9
Sulphuric, 66°, 100 lbs.	1.25-1.80
Muriatic, 18°	1.10-1.80
Tartaric crystals	2.65-3.00

Miscellaneous Chemicals and Dyestuffs.

Acetate of lime, gray, 100 lbs.	2.50-2.95
Alum, lump	1.72-2.50
ground	1.82-2.25
powdered	2.80-3.32
Aqua ammonia, 26°	
Ammoniac, sal., gray	
Borax, bbls.	4-7½
Brimstone, crude, ton	26-52
Copperas	60-82
Cream tartar, crystals	22-25
Fuller's earth, powdered, ton	18½-20
Glauber's salt	51-65
Potash, chlorate, crystals	11½-12½
powdered	12-13
carbonate	6-7½
Soda, bicarbonate	1.60½-1.76
Soda, caustic, domestic, 60 per cent.	1.73-1.90
Sal., American	72½-86
Vitriol, blue	5-6
Acetate of soda	4-6½
Acid, picric, best crystals	25-50
tannic, commercial	30-41
Albumen, egg	62-71
blood	24-32
Alizarine, red	17½
Aniline, oil	11½-12½
salt crystals	13
Bichromate of potash, American	9½-10½
Bichromate of soda	8-9
Bisulphite of soda	3-4½
Cutch, mat	5½-7½
Dextrine, imported potato	6½-10
Divi-divi, ton	45-68

EDWIN F. SCHOFIELD

Cotton Waste

IMPORT and EXPORT

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William B. Charles,

Amsterdam, N. Y., U. S. A.

Cotton and Wool Wastes

COTTON YARNS

Contracts made with Cotton and Woolen Mills for Yearly Waste Production. Correspondence solicited. Shepperson's Code, 1878. Cable Address "Charles."

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Established 1871 **FLOCKS**

Chemische Aniline Works

Manufacturers of

Anthracin & Coal Tar Products

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ARACHIDELLE CREME

For Softening Woolen and Worsted Yarn in Spinning

This is an absolutely pure and neutral product and leaves no stain or residue of any kind. It helps the spinning amazingly and the natural elasticity of the wool is retained perfectly in the yarn. Widely used by the best spinners of Europe and by many spinners in America, particularly those with foreign connections and experience. Mixes with any proportion of Water.

Send for samples and references.

VERA CHEMICAL CO., Stoneham, Mass.

Also manufacturers of *Apollo Oil for Wool* and *Hermallin* for use in preparation of sizing.

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The HOME INSURANCE COMPANY NEW YORK

Organized 1853. MAIN OFFICES, 56 CEDAR ST.

Cash Capital, $3,000,000.

ASSETS January 1st, 1908	$20,862,698
LIABILITIES (Including Capital)	13,659,487
RESERVE AS A CONFLAGRATION SURPLUS	500,000
NET SURPLUS OVER ALL LIABILITIES AND RESERVES	6,703.211
Surplus as Regards Policy-holders	10,203,211
Losses Paid Since Organization Over	110,000,000

Note amount of surplus after providing for San Francisco and other conflagrations.

HOME Policyholders everywhere have protection, which is sure, notwithstanding conflagrations anywhere.

IS prepared to entertain liberal lines on Sprinkler-Equipped and Modern Improved risks generally, having a special department for the consideration of such business.

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EMANNEL H. A. CORREA, Vice-Pres. AREUNAH M. BURTIS, Secretary.
FREDERICK C. BUSWELL, Vice-Pres. CHARLES L. TYNER, Secretary.
CLARENCE A. LUDLUM, Asst. Sec'y. HENRY J. FERRIS, Asst. Secretary.

New York, New York. A special meeting of the American Grass Twine Co. will be held October 14 to vote on a proposition to reduce the capital of the company from $15,000,000 to $3,000,000 and change its name to the Crex Carpet Co. The reason the management gives for the reduction of $12,000,000 of capital is that the capitalization should be made to approximate more closely the value of its tangible assets, which it places at $3,000,000. Plants are operated at St. Paul, Minn., and Oshkosh and West Superior, Wis. The New York offices are at 377 Broadway and 59 White St.

*North Carolina, Bessemer City. The movement to take over the Vermont Mills, Inc., by the stockholders includes the organization of a new corporation to secure the property at the purchase price of $60,000, funds to be raised by issuing bonds bearing 6 per cent. interest and running from one to ten years. The Vermont Mills went into the hands of a receiver some months ago and later were sold at auction to a syndicate of creditors for $60,000. Mrs. J. M. Odell is interested in this proposition.

*North Carolina, Jonesboro. The sale of the Eugenia Mfg. Co. to D. E. McIver has been confirmed by the court and it is likely the plant will begin operations at an early date.

North Carolina, Wadesboro. An issue of $75,000 in bonds is to be made by the Wadesboro Cotton Mills Co. to pay for the addition which was recently built and equipped.

Ohio, Newton Falls. The Western Reserve Woolen Mill, W. E. Starr, proprietor, which has been idle for a number of years, has been started up to work up the stock on hand. On the completion of this work, the machinery will be removed and building torn down to make room for a new power plant to be constructed for the Peerless Electric Co. The woolen mill contains one set and six looms.

*Oklahoma, El Reno. The Canadian Cotton Mill Co., reported incorporated with capital stock of $50,000 in August, is reported to be contemplating the erection of a cotton mill at this place. It was previously reported that this company would deal in cotton and possibly manufacture at a later date. The present report is not verified. Frank E. Gillette of this place, W. A. Patterson of St. Louis and Fred A. Gillette of Hobart, Okla., are the incorporators.

Pennsylvania, Chester. It is understood that a Philadelphia concern will equip a plant in this city with machinery for the production of all classes of hospital and pharmaceutical cotton supplies. Complete dyeing, bleaching and finishing departments will be operated.

Pennsylvania, Philadelphia. The Unity Worsted Company, recently reported by us as filing articles of incorporation with a capital stock of $100,000, have just received their charter. This concern takes over and operates the Unity Woolen & Worsted Company in the Lomax Mills at Jasper and Orleans Sts., where they are operating 80 broad looms on plain and fancy woolens and worsteds, which they sell through New York.

The WM. H. LORIMER'S SONS CO.,

Manufacturers of

MERCERIZED YARNS

FOR ALL PURPOSES.

MERCERIZERS AND DYERS.

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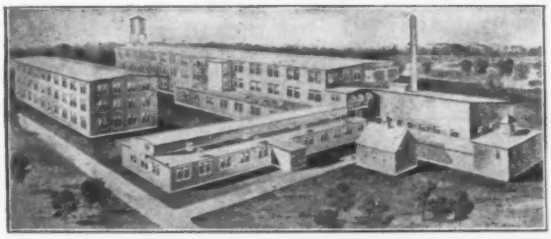
PETER B. McMANUS, Pres. and Treas. EDWARD J. McCAUGHEY, Secy. and Mgr. JOHN McMANUS, Vice-Pres.

HOME BLEACH AND DYE WORKS, Inc.



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Cotton Yarns

in skein, and long and short

CHAIN WARPS

Fast Colors a Specialty.

Daily Capacity 30,000 lbs.

Fast Colors and Black for Worsted Trade.

Office and Works, Pawtucket, R. I.

Established 1881.

GLOBE DYE WORKS CO.,

Successors to R. Greenwood & Bault

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Globe Bleach and Dye Works,
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YARNS BLEACHED AND DYED (delivered on cones)

BLEACHING and DYEING

ESPECIALLY FOR THE

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N. B. Bleached Finishing Yarns on Cones for Underwear, always in Stock.

JOHN F. DAVIDSON, Orianna Bleach Works

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Of Turkish Towels, Cotton Yarns, Underwear and Tapes

Turkish Towels Made Up to Suit the Trade and Shipped to Any Point

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THE SOLWAY DYEING & TEXTILE CO.,

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Dyers, Bleachers and Mercerizers

of Cotton Yarns in Long or Short Chain Warps and Skein in FAST COLORS, for all purposes.

Also Dyers of Genuine Turkey Reds.

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Dyers and Finishers

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Dyeing and Finishing of Piece Goods Exclusively, such as Wool Armures, Prunellas, Satins and Henriettas. Panamas, Poplins, Serges and Cheviots. Mohairs, Bradford Finish, in Fancy and Solid Colorings. Also Suitings and Cloakings.
Specialty in the Treating of Silk and Wool Fabrics, such as Eoliennes, Crepes and Henriettas and all high class wool tissues like Batiste, Voiles and Foules. Also, Cotton and Wool Goods, Mohair Linings and Lastings.

SPECIAL ATTENTION IS GIVEN TO THE REDYEING OF ABOVE

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Sheetings, Shirtings, Lawns, India Linons. Everything in White Goods.

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The Western Thread and Dye Works

COTTON AND MERCERIZED DYEING AND BLEACHING
CONE AND TUBE WINDING

21st Street and Marshall Boulevard, **CHICAGO**

We are Dyers of all kinds of YARNS AND Cotton Warps

We are sure we can give you better work and better service than you can get elsewhere. A trial will convince.

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THE PEERLESS COMPANY,
Willard and Jasper Sts., Philadelphia.
Dyers of Skein Silk
FOR ALL TEXTILE PURPOSES
Fast Colors on Silk for Worsted Manufacturers.
Pure Dye and Weighted. Bright and Souple.
Dyers of Peerless Black on Artificial Silk.

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Bleachers and Dyers of COTTON YARNS and STOCKINET
Office with Blodgett & Orswell Co., Manufacturers of Glazed Yarns.
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B. & L. ANTI-CHLORINE (ultra bleaching process)
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CELLULINE—For cotton warps
SIZING AND FINISHING COMPOUNDS

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IF
you size or finish your goods,
IF
you strip your goods,
DIASTAFOR
can show
ADVANTAGES
from standpoint of economy as well as quality of fabric.

The American Diamalt Co.
Riverside, Cincinnati, Ohio

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Dyestuffs and Chemicals

Fast Colors for Wool and Cotton.
Full Line of Direct Cotton Colors.

THIOPHENOL BLACK T EXTRA and 2 B EXTRA.
PYROGEN BLUE R . . .
PYROGEN INDIGO. . . . .

Direct Sulphur Colors, Faster than Indigo, to light and Washing.

Chrome Fast Blacks, Blues, Browns and Yellows.
Acid Benzyl Blue, Violet Green and Black.

Headquarters for Caustic Potash 90%. Carbonate of Potash. Chlorate of Potash and Soda. Tannic Acid. Bleaching Powder.

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The Society of Chemical Industry, Basle, Switzerland.

THIOGENE COLORS

Sulphur Colors for cotton dyeing.

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Fast one-dip mordant dyes.

RESIST COLORS

All shades

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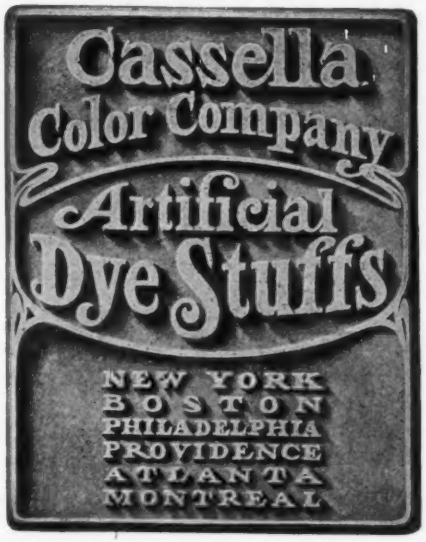

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animal & vegetable fibres or their mixtures is the best.

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dyeing either after the one bath method absolutely fast, or on chrome bottom.

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Originators of the Sulphur Color Industry

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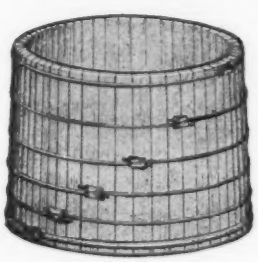

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For Raw Stock, Cotton and Wool Dyeing.

The only perfect machine for Sulphur Black Dyeing.

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Condition of Stock,
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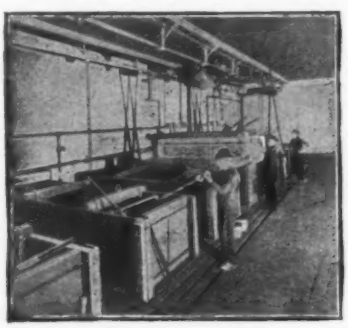
Waters' Dyeing Machine

This cut shows a new and useful machine patented by D. F. Waters for the dyeing of any color on Worsted, Woolen, Cotton and Merino Yarns.



Being successfully operated by some of the largest manufacturers in the country.
The saving of labor will more than pay for a machine in a few months.
Capacity; 2,000 lbs. a day per man.
Machine can be seen in operation at any time at my plant where I have 13 in operation all the time.

D. F. WATERS,
53 and 55 Wister St., GERMANTOWN,
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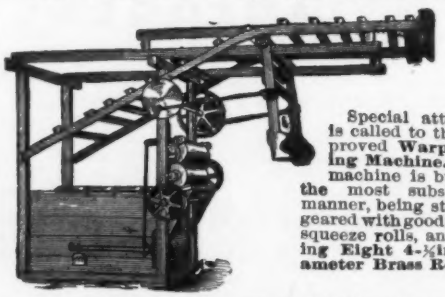
The Reliance Warp Dyeing Machine.



Special attention is called to this improved **Warp Dyeing Machine.** This machine is built in the most substantial manner, being strongly geared with good, heavy squeeze rolls, and having **Eight 4-½in. Diameter Brass Rolls.**

This machine, with our Improved Plater-down has met with marvelous success, and parties desiring machinery of this class, can make no mistake on ours For further particulars and prices, address

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Tubs and Tanks of all kinds for Dyers, Bleachers, Factories, etc.

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Hours from 12 to 1

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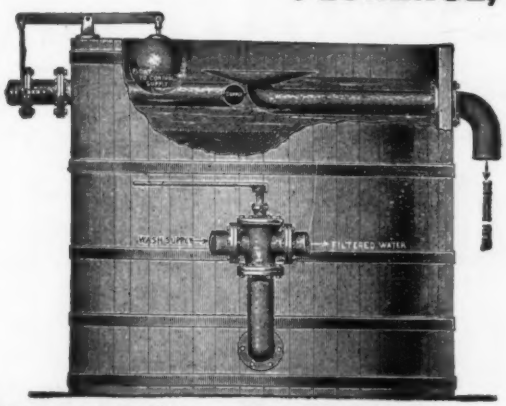

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Our filters are already in use in a number of the representative textile mills of the country, from whom we have received many expressions of satisfaction. Our representative will call and explain our system whenever desired.

Hungerford & Terry, Filtration Engineers

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Hungerford Filters having a daily aggregate capacity of over **Thirty Million Gallons** per day are now in operation in the Textile Mills of America.

Estimates and plans for proposed installations submitted without cost.

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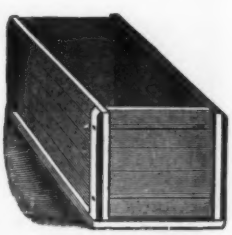
For Bleaching, Dyeing and Finishing.

Reservoir Tanks of any Capacity or Shape for Sprinkler Systems and all purposes.

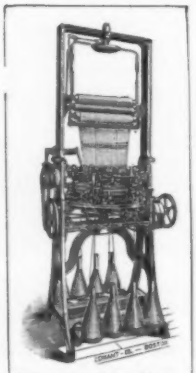


Office 1429 Chestnut St., Philadelphia, Pa.

CHARLES COOPER

BENNINGTON, VERMONT.

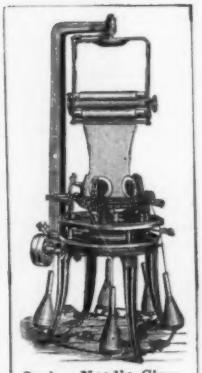
MANUFACTURER OF



Circular Spring Needle Rib Top Machine.

Knitting Machinery

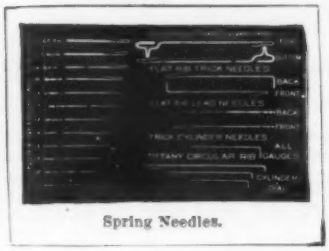
Flat and Circular Rib, both Spring and Latch Needle, Plain Circular Machines, Lead or Trick Cylinder.



Spring Needle Circular Plain Body Machine.

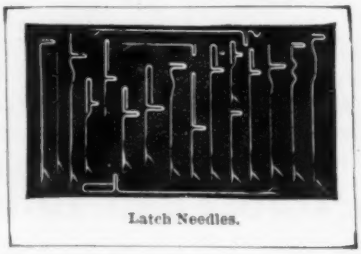
Spring Needle Cylinder Rib-Top Machines

For making Cuffs, Drawer Bottoms and Shirt Borders.



Spring Needles.

Spring and Latch Knitting Needles, Burr Wheels, Burr Blades, Sinkers, Jacks, Etc.



Latch Needles.

COLLARETTE ATTACHMENT.

AMERICAN REPRESENTATIVE.

G. H. ROGERS,
509 Clinton St., Hudson, N. Y.

EUROPEAN REPRESENTATIVE.

FELIX LEDERER.
Ix/4 Schubertgasse, Nr. 22, Vienna, Austria.

Full Fashioned Hosiery Machines

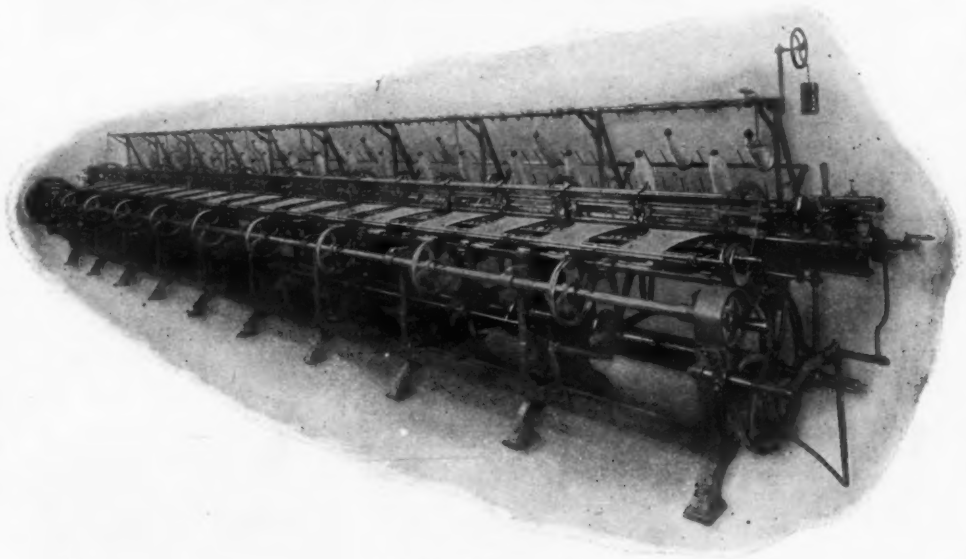
BUILT BY

SCHUBERT & SALZER

Largest Manufacturers of all classes of Hosiery Machines.

The plant, which is located in Chemnitz, Germany, declared by engineering experts and hosiery manufacturers to be the finest of its kind, is equipped with the most modern American and European machine tools, employing 1600 skilled workmen.

These machines have been proven the best constructed and most productive in the market for the manufacture of cotton, lisle and silk hosiery and since their introduction into this country 13 years ago have always been the leaders among a number of competitive makes, as upon trial they have fully borne out all that is claimed for them.



REFERENCES:

All the leading manufacturers of full fashioned hosiery in this country. Largest individual order for 65 eighteen section machines placed recently by the new million dollar concern, the Brown-Moore Hosiery Co. of Philadelphia.

AMERICAN REPRESENTATIVE:

OTTO WALTHER, - 507 Bourse, - Philadelphia.

Wildman Manufacturing Co.

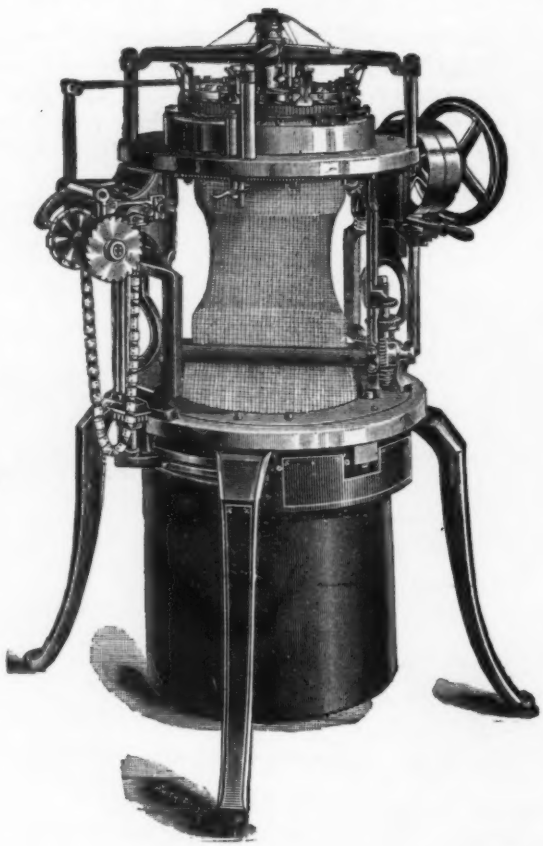
Norristown, Penn., U. S. A.

Manufacturers of

Circular Rib Knitting Machinery

Automatic Stop Motions

Electric Cloth Cutters



AUTOMATIC AND PLAIN

For all classes of Ribbed Hosiery, Underwear, Combination Suits, Sweaters, Etc.

THE GROSSER KNITTING MACHINE CO.

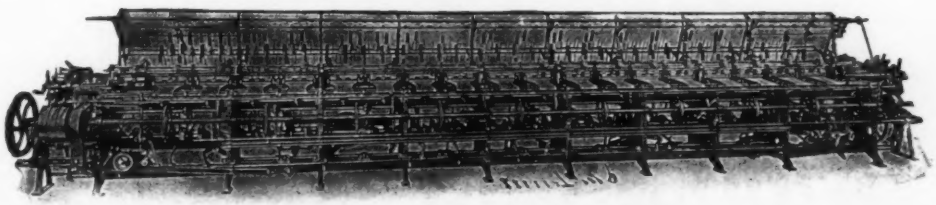
WOOL EXCHANGE
260 W. Broadway **MAX NYDEGGER** **NEW YORK**

PHILADELPHIA OFFICE 435 BOURSE BLDG.

All Special Machines for Any Article That Is Knit

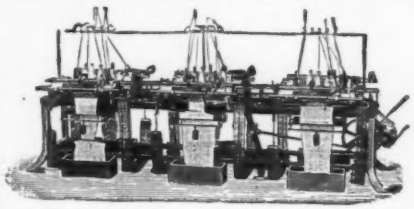
Full Fashioned Hosiery Machines

System **G. Hilscher, Chemnitz, Saxony**



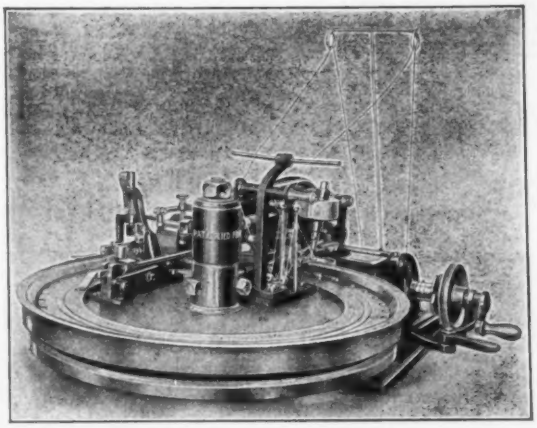
18 Section "COTTON HILSCHER" Machine for Full Fashioned Hosiery, Silk, Cotton, Wool, etc.
Gold Medal, Paris, 1900 Numerous Patents Covering Special Improvements

GROSSER Flat Knitting Machines
For HAND Power or FULLY AUTOMATIC Power MACHINES. Most productive and best machines for Sweaters, Jackets, Blouses, Wool Hosiery, Gloves, Mittens, Sporting Goods in Plain, Fancy and Jacquard Work, Shaker Articles, etc. Large stock on hand. Power Machines to be seen in operation.



CIRCULAR FRENCH FRAMES
C. Terrot Söhne, Cannstatt, Würt, famous builders of the best Circular Frame for Finest Underwear, Fleece Linings, Gloves, Special á-jour (openwork) Fabrics, etc.

RASHEL MACHINES [Double Rip Warp Knitting Machines.]
For Fancy Goods in largest variety, Shawls, Capes, Caps, Borders, Fringes, Lace Work, etc., in silk, wool cotton.



The LOOPER THAT LOOPS!
Two thread lock stitch machine with reliable trimmer and raveller producing *indistructible, flat elastic* seam.
No Hosiery or Underwear plant up to date without this machine.

DIAMOND OVERSEAMERS
for all classes of selvege goods, Full Fashioned Hosiery, Underwear, etc.

FINISHING MACHINES for Knit Goods of all styles.

WINDERS for finest yarns.

Information, Samples and Specifications at Your Disposition

FRIEDBERGER-AARON MFG. CO.

Leading Manufacturers

Braids and Edgings

For Trimming

Ladies' Ribbed Underwear.

Having Installed More New Machinery and **Increased Our Facilities** in general, we are in better position than ever to sustain our **Established Reputation.**

Mills: Germantown, Philadelphia

P. O. Address, Logan Station, Philadelphia.

Higher Speed

To Reduce Cost of Production by Increasing Output of Operators

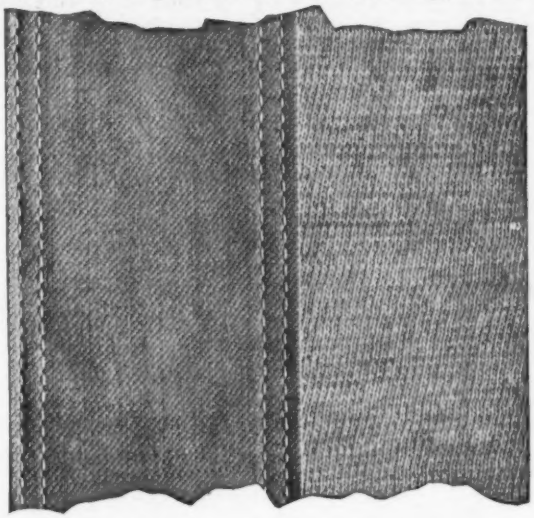
Higher Efficiency

USE

Multiple Needle Machines

For all Multiple Needle Operations, whether for Ornament or for Service, where it is desired to have a plurality of parallel rows of stitching, needles spaced as desired

Yielding Bottom Presser Foot to be used where different thicknesses of Fabric are being Stitched Simultaneously



Special Fittings and Attachments now ready for Numerous Manifold Operations

Greater Simplicity

Style 16100 A-4 Needles-8-80-8 Gauge
Stitching Front Facings to Shirts
One Operation

Greater Durability

Union Special Machine Company

BRANCHES
96 South St., Boston, Mass.
50 E. Main St., Amsterdam, N. Y.
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HOME OFFICE AND WORKS
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GENERAL EASTERN OFFICE
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Drying Forms.

BOARDS FOR FAST BLACK DYERS.

HOSIERY FINISHING BOARDS.

BEST WORK. PROMPT SERVICE. PRICES ALWAYS RIGHT.

JOS T. PEARSON 1815-21 TAYLOR ST. KENSINGTON PHILA

Hosiery Boards.

JAMES TAYLOR, 121 Arch Street, Philadelphia Pa.

ALL KINDS OF NEW AND SECOND HAND **KNITTING MACHINERY**

A RARE OPPORTUNITY TO BUY.

60 Lamb and Grosser sweater machines.
30 Standard "B" 3¼" Knitters, 200 Needles.
20 " "B" 3¼x4" " 188 "
54 " "B" Knitters for sizes.
24 Mayo "Acme" " " "
7 National Knitters, 3¾ in., 216 needles.
7 " " 3¼ " 200 "
60 Lamb & German flat machines.
2 Double Ribb machines
1 Crane Style Collarette Machine 20" 16 to in.
1 Rotary Fire Pump. 3 small Pumps.
2 Toque machines.
4 Hosiery Dryers.
500 Dozen hosiery shaping boards.
1 Caligraph Typewriter
1 5 h. p. Gen. Electric Motor, 3 phase.
1 ½ h. p. Electric Motor.
500 Payne Winder Bobbins.
100 ¾ Aut. Knitters, various makes and sizes.
4 Abel 36 Spindle Cop Winder.
1 Huse 30 Spindle Cop Winder.
1 Uhlinger 42 in. Extractor, friction driven.
1 Cleveland 42 in Extractor belt driven.
1 Crawford 21 plate Press 31 x 44 (hollow plate, screw press).
1 Pownall Screw Press 34 x 52 in.
1 Baling Press 36 x 48.
5 Band folding and cutting machines.
1 Curtis & Marble Napper, 66 in.
1 McCreary Napper, 60 inch, 16 rolls.
8 Jones Fleecers, 24 x 36 in.
6 Platform Scales, on wheels.
1 Singeing Machine.
1 Hosiery Printing Press.
4 Hosiery Lever Presses.
42 Union Spec. Sewing Machines, various styles.
50 Loopers and Seamers, all makes.
60 Ribbed Underwear machines.
300 Hosiery Ribbers and Sleevers.
29 Standard "B" 3¾ in., 176 Needle Knitters.
3 Small Steam Traps.
1 Farrell, Herring & Co. fire proof safe.
1 40 Spindle Payne Skein Winder.
1 24 " " " "

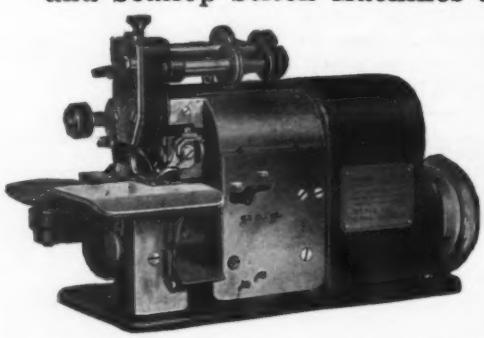
WRITE FOR COMPLETE LIST. APPRAISEMENTS A SPECIALTY.

We are always in the market to buy good second-hand Knitting and Finishing Machinery.

The Merrow

FAST
DURABLE
Light Running

High Speed Overseaming, Overedging and Scallop Stitch Machines are



OUR NEW STYLE 60 MACHINE for Trimming and Overseaming in one Operation produces the strongest, best Seam and does it with the greatest economy.

USE STYLE 18 for Horse Blankets. STYLE 17 or 22 for Bed Blankets. STYLE 35 B SHELL, for Necks and Fronts of Rib Goods, produces the most showy, substantial finish.

Send for Catalogue and Samples.

THE MERROW MACHINE CO. HARTFORD, CONN.

Knickerbocker Building, Sixth and Arch Sts., Phila. Room 321, 467 Broadway, New York

EXCELSIOR KNITTING MACHINE MFG. CO.

Meadow and Washington Streets

ALLENTOWN, PENNA.

BUILDERS OF

Full Automatic Knitters

With or without **Transferring Device**

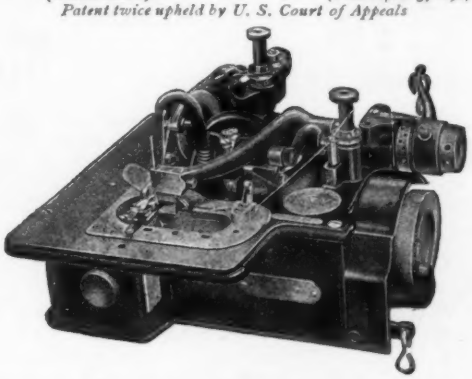
ALL SIZES AND GAUGES, 2 1-4 INCH TO 4 INCH

AN INSTRUMENT OF PRECISION!

"OVERLOCK" MACHINE

(Trade Mark) (Pat. April 5, 1892)

Patent twice upheld by U. S. Court of Appeals



Trade Mark. Reg. U. S. Pat. Off.

Business Established in 1859.

For TRIMMING, SEAMING (or Hemming or Overedging) and COVERING Raw Edges of Knit Underwear and Hosiery in **ONE OPERATION** at **3000 Perfect Stitches per Minute**

WILLCOX & GIBBS SEWING MACHINE CO.,

General Offices: 658 BROADWAY, cor. BOND STREET NEW YORK, N. Y.

LONDON PARIS MILAN DRESDEN BRUSSELS NOTTINGHAM

The Invincible

Full Automatic.

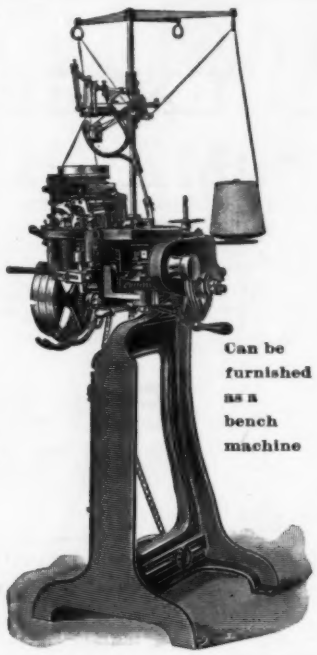
"The KNITTER that KNITS"

THE LARGEST PRODUCER OF PERFECT WORK.
SIMPLE, POSITIVE AND EASY TO OPERATE.

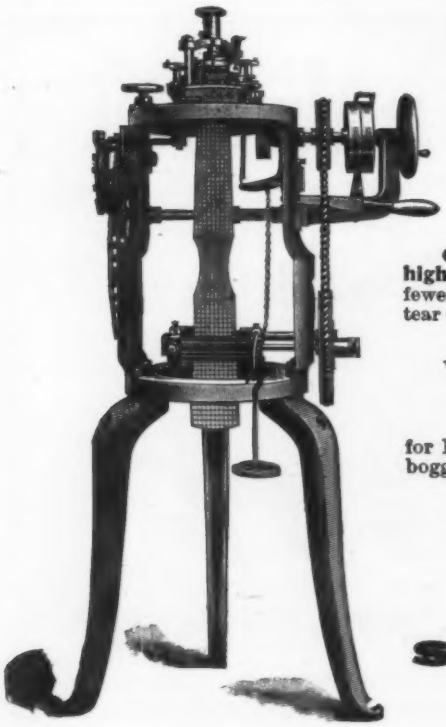
E. JENCKES MFG. CO.

Pawtucket, R. I.

PHILADELPHIA OFFICE,
101 North Sixth St.



Can be furnished as a bench machine



High Speed Rib Knitting Machinery.

Our latest model machinery has been designed to run at very high speed, giving large production. This is accomplished with fewer seconds, less breakage of needles, less jar and wear and tear on machines than has been customary at lower speeds.

We also make Special

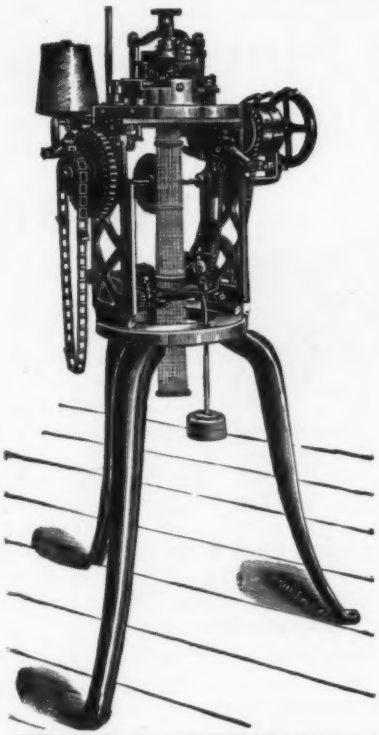
STRIPING AND DESIGNING MACHINES

for Fancy Golf Stockings, Bathing Suits, Sweaters, Toques, Toboggan Caps, Skirts, etc.

Our Machinery gives large production at low cost and enables manufacturers to meet the market always and make a profit.

STAFFORD & HOLT,

LITTLE FALLS, N. Y.



H. Brinton & Co.

213-215 Race Street, Philadelphia, Pa.

BUILDERS OF

Knitting Machinery

For HOSIERY and UNDERWEAR.

Complete Estimates Furnished. Send for Particulars.

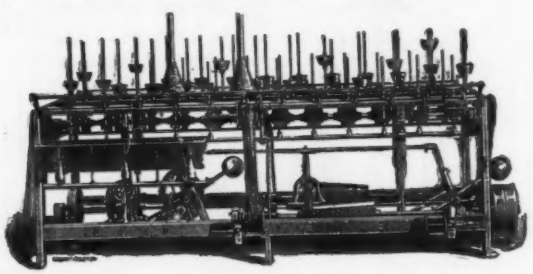
The cut shows our **Improved Automatic Ribber** with **Welt and Slack Course** for Half Hose, Tops and Ribbed Legs.

CIRCULAR KNITTING MACHINES

Either plain or full automatic, with stop motions complete. 4 to 24 feeds for

RIBBED UNDERWEAR

Automatic Racking and Striping Machines for Sweaters, Cardigans, Collarettes, Cuffs and Anklets.



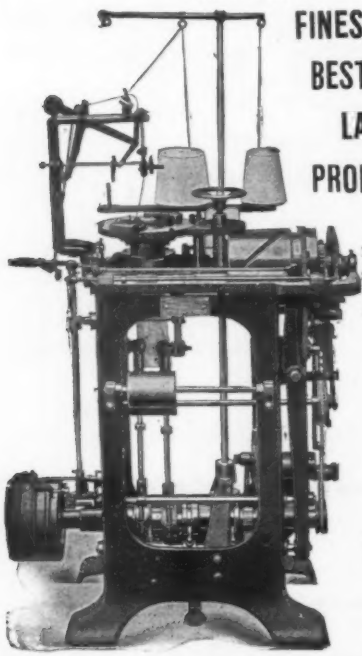
ALSO BUILDERS OF THE WELL-KNOWN

ABEL WINDERS, SEAMERS and LOOPERS.

LEIGHTON MACHINE CO., - Manchester, N. H.

"NATIONAL"

Stands for



FINEST GAUGES
BEST FABRIC
LARGEST
PRODUCT ON

Greatest Variety of Laces and Novelties.

Allautomatic.

Lowest Cost for Operating

Also

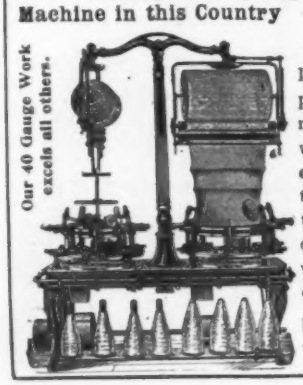
Rib Knitting Machinery, Overedge, Crochet and Shell Stitch.

NATIONAL AUTOMATIC KNITTER CO.

728 Cherry Street, PHILADELPHIA, PA.

We are the Oldest Manufacturers

of this Design of Spring Needle Knitting Machine in this Country



40 years' experience

Do not be misled by people who became manufacturers in 1903 without any previous experience who are trying to represent that they are the oldest manufacturers. Investigate. Call and see our fine gauge work.

Robt. W. Gormly & Co.
Troy, N. Y.

The New Boss Seamless Knitter

Do you want the biggest production with the least menders, for the least money? If so, write to the Boss Knitting Machine Works for their circular with full directions. There is no cylinder to be handled. We use only one cylinder and transfer device for half hose or ladies' hose. This machine beats them all. Has no equal for simplicity and durability. Makes 300 revolutions per minute. Built in sizes from 2¼ to 5½; from 40 to 224 needles. Automatic in heel and toe. It is the strongest built knitter on earth.

Send for prices and particulars.

THE BOSS KNITTING MACHINE WORKS,
Cor. Elm and Reed Sts., Reading, Pa.

"Acme" and "Hemphill"

SEAMLESS HOSIERY

Knitting Machines

built by

Mayo Knitting Machine & Needle Company

Franklin, N. H.

Answer all purposes in the *most reliable*, *up-to-date*, and *economical* manner. Write us for full particulars.

Manufacturers like our Latch Needles

because we make a superior grade of needles.

Philadelphia Office, Knickerbocker Bldg.

STANDARD MACHINES FOR HOSIERY MAKING

The STANDARD F, with attachments, can make any and all of these fabrics:

Plain Goods
Plaited Work
Three Color Stripes
Tipped Heel and Toe
White Foot
Changed Heel and Toe
Garter Top
Loopers Slack Course

Most Stockings—Best Fabrics—Longest Life

Standard Machine Company

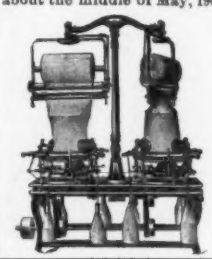
OFFICE AND SHOW ROOMS

330-340 North 12th St., Philadelphia

We Are the Oldest Manufacturers
IN THE WESTERN HEMISPHERE
Of Circular Spring Needle Loop-Wheel Knitting Machinery.

TOMPKINS BROS. CO., Troy, N.Y.

We submit the following extract from the sworn testimony of R. W. Gormly, in U. S. Circuit Court, Northern District of New York, in equity, No. 6764:
Cross Question 123. How long have you been a manufacturer of knitting machines? Answer. I started in this business about the middle of May, 1900.



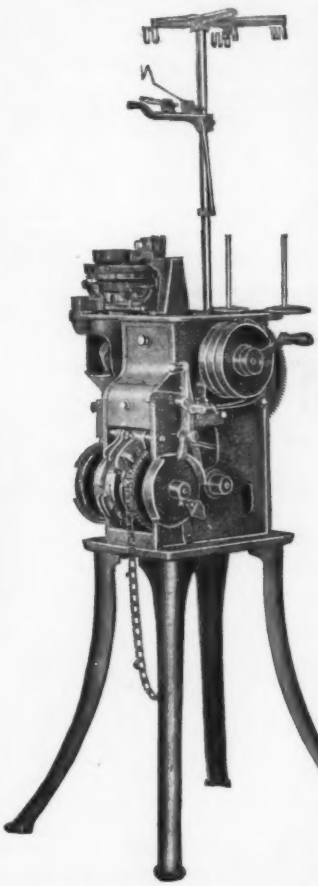
Tompkins Knitter

This design was adopted in 1875.
BUSINESS ESTABLISHED in 1846, before ROBERT W. GORMLY Was born, according to his testimony in the case above cited.

"THE BANNER"
Hemphill's Latest

A FULL AUTOMATIC MACHINE

Specially adapted to



Plaited Goods
and
String Work
also
High Splice
and
Double Sole

Largest Production
More Yarn Changes
Highest Speed
Simplest
Least Repairs

Produces a Superior Quality of Work.

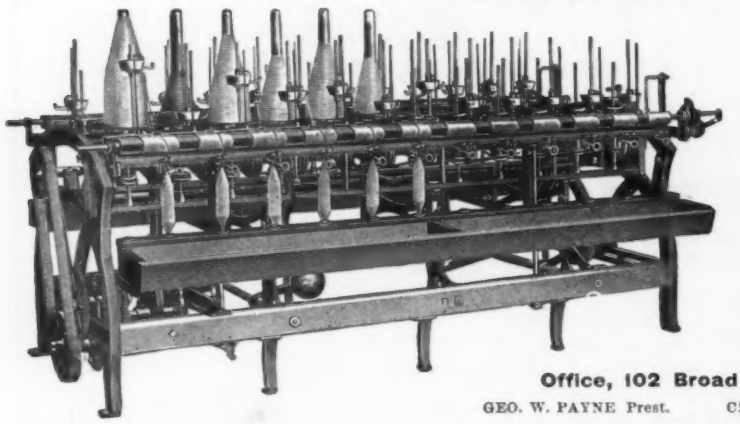
MANUFACTURED BY THE

Hemphill Mfg. Co.

131 Clay Street, PAWTUCKET, R. I.

OVER 1,900 PAYNE WINDERS IN USE

By Hosiery Manufacturers,
Wind for Cop, Skein or Bobbin.



Improved

Upright Spoolers,

To Spool from Cop, Skein or Bobbin.

Doubling Spoolers for doubling 2, 3, or more ends into one.

Upright Quillers, Quill from Cop, Skein or Bobbin.

Ring Dresser, Spooler and Reel Spindles, Cop Skewers, Warp, Spool, Spooler, Guides, Bolsters and Stops Made and Repaired at Short Notice.

GEO. W. PAYNE CO.,

[Est. 1865. Inc. 1903.]

Office, 102 Broad Street, Pawtucket, R. I.

GEO. W. PAYNE Prest. CLINTON F. PAYNE, Sec'y. and Treas.

HEPWORTH & CO.'S

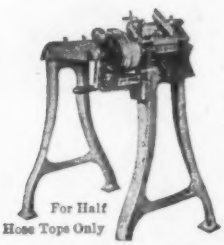
Patent Single-Stitch

LOOPING MACHINE.

Needle working from the inside, avoiding the breaking of needles and points and picking up the metal.

Single and Double Stitch, or Both Combined.

JOHN W. HEPWORTH & CO.,
N. W. Cor. Lehigh Ave. and Mascher Street,
PHILADELPHIA.



For Half Hose Tops Only

AUTOMATIC POWER TOP CUTTING MACHINES

Will cut, automatically, 1000 dozen half hose tops, or cut, and automatically pile in heaps of one dozen each, from 400 to 700 dozen misses tops, according to length, per day.

ROBINHOLD MACHINE CO.
650 North 8th St., Reading, Pa.

For Half Hose, Misses and Childrens Tops

WILLIAM C. BULL, BENNINGTON, VERMONT.

MAKER OF

For Ladies', Gents' and Children's Goods.
Latest Styles.
Best Workmanship.

Drying Form Boards

OF EVERY VARIETY.

PAXTON & O'NEILL'S

Full Automatic Knitter

FOR ALL KINDS AND GAUGES OF SEAMLESS HOSIERY.
RANGE ON HALF HOSE AND LADIES FROM 260 NEEDLES DOWN.

3-4 AUTOMATIC KNITTER

With Lace Effects.

Exclusive rights to BROWN'S LACE ATTACHMENT.

537-39-41 North 3d St., - - - - - PHILADELPHIA.

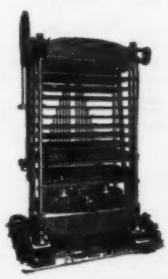
Patent Loopers

Both single and double Stitch. with the Patent Raised or Straight Points.

Beattie Machine Works,

Cohoes, N. Y.

The CRAWFORD



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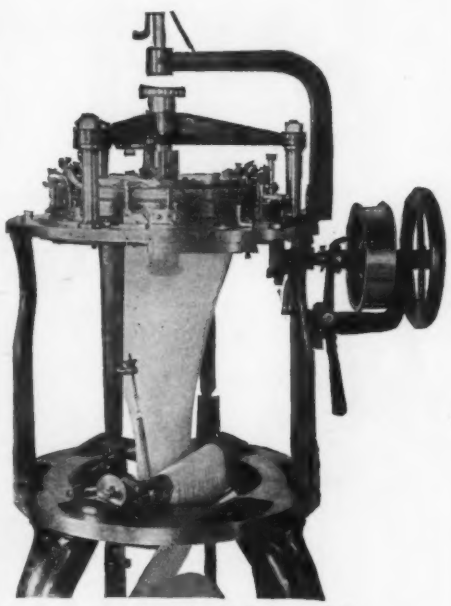

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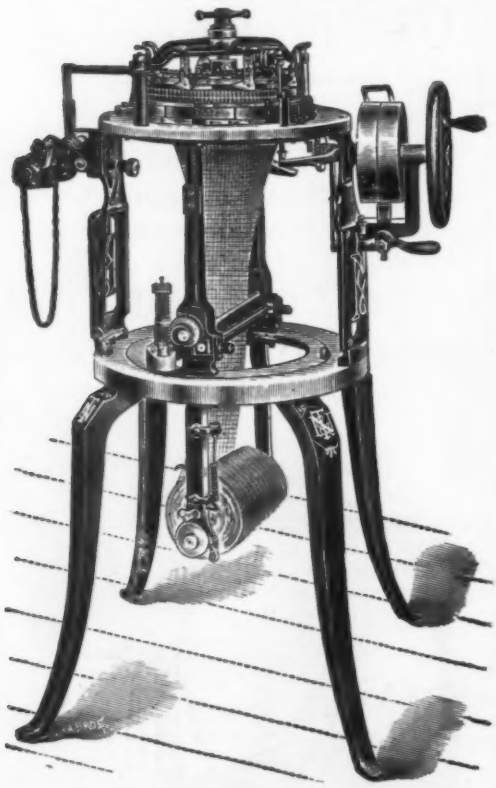

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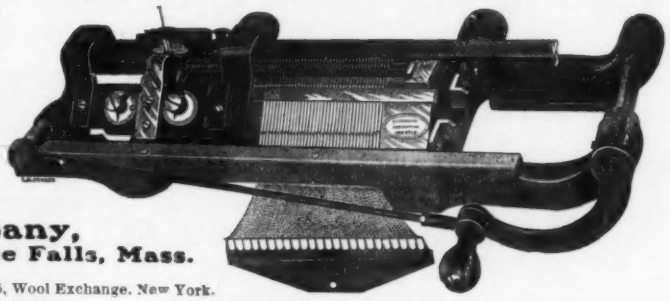

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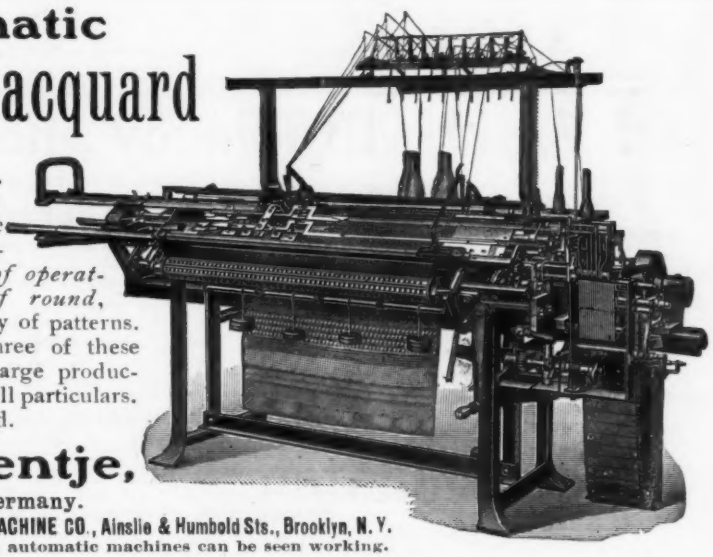

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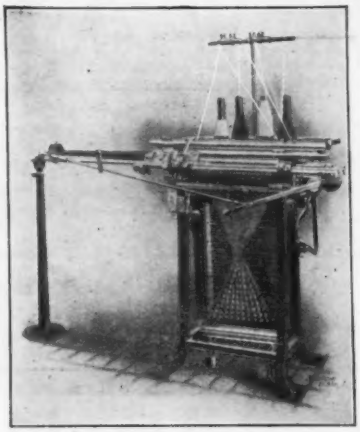

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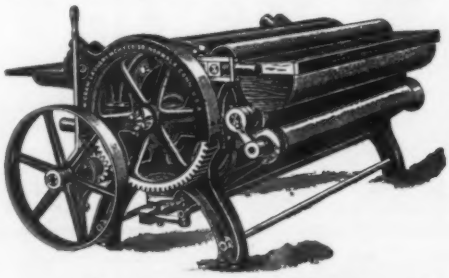

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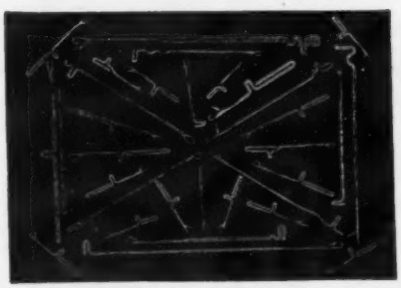

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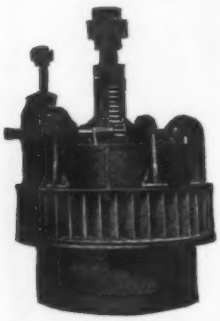

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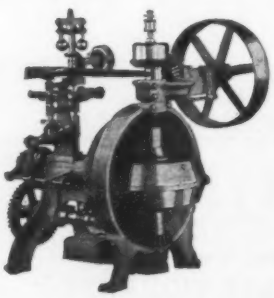

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Jolly guarantees at least 80% efficiency

either for mill drives or direct connection to electric generators where high speeds effect great economy on installation of electrical apparatus.

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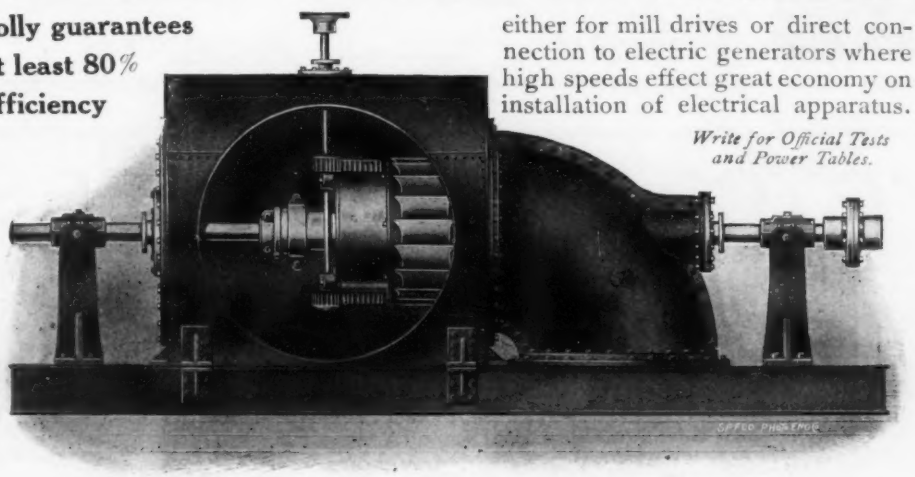

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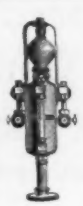

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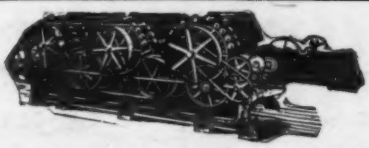

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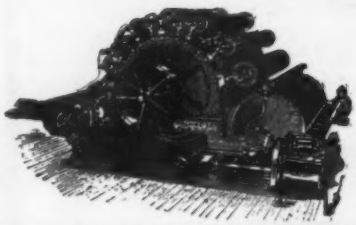
For reducing to Fibre Cotton and Wool Waste, Cloth Clippings, Etc.



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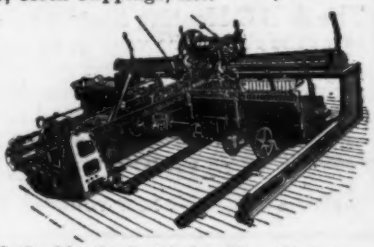

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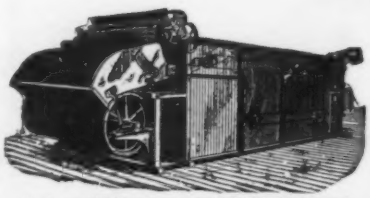

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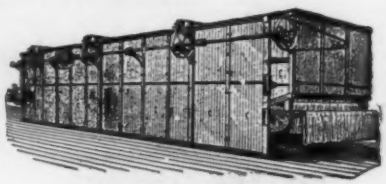

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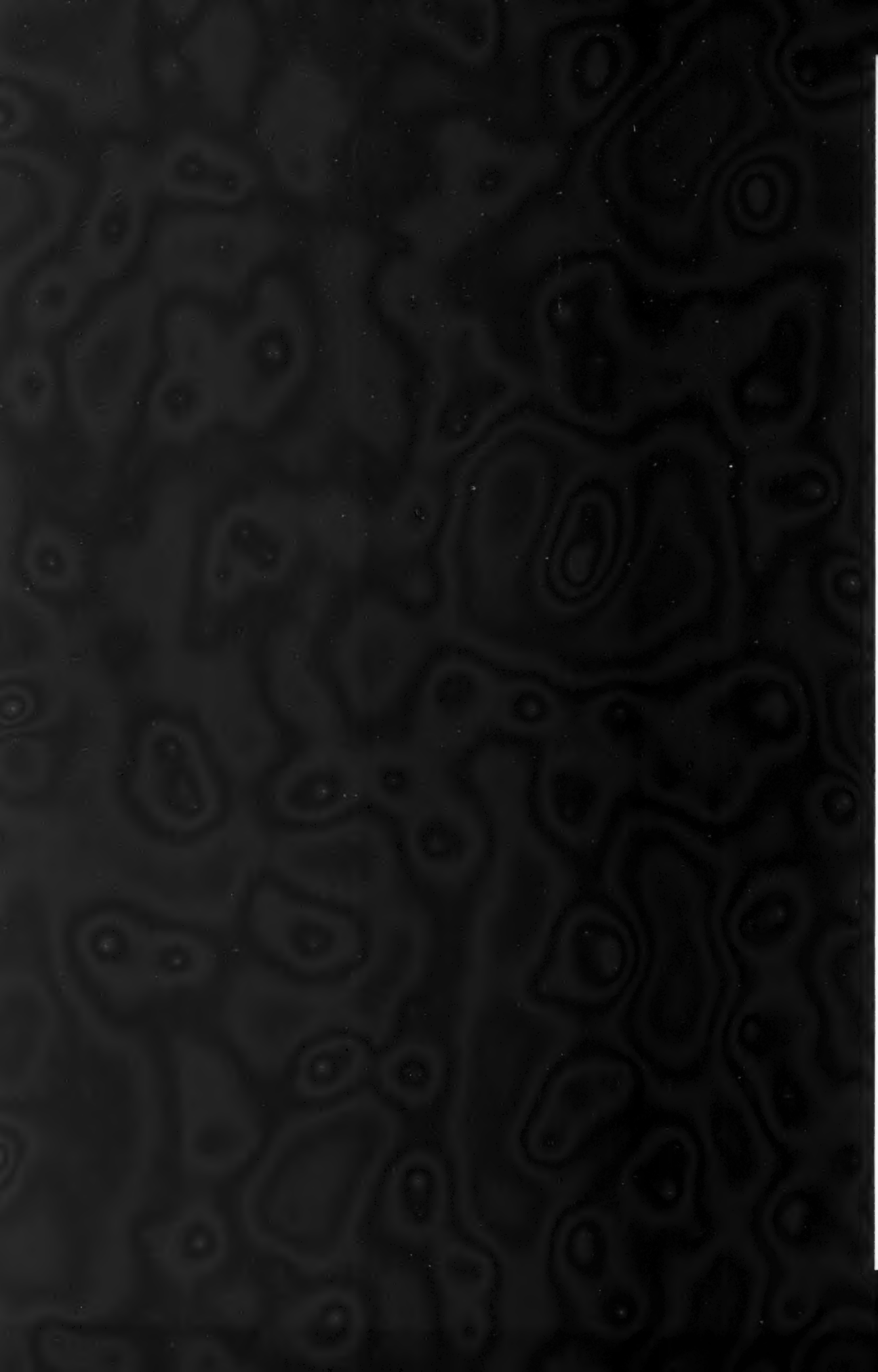

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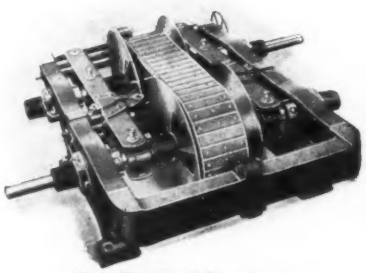

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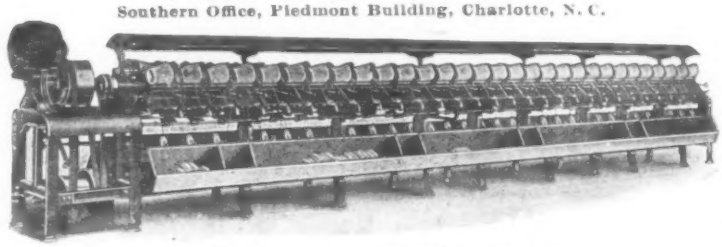

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